COMPUTERWORLD

Pure Java eludes Netscape

▶ *Mammoth code conversion forces delays*

By Carol Sliwa
PARIS

NETSCAPE COMMUNICATIONS Corp. next year plans to ship two major upgrades to its Communicator groupware client, but it probably won't meet its goal of delivering an all-Java version in 1998.

Netscape's 100% Pure Java Communicator will take longer than expected due to the overwhelming task of converting millions of lines of C and C++ code into Java, Executive Vice President Marc Andreessen disclosed last week at the compa-

ny's developer conference here.

"We'll try to get there as soon as we can," Andreessen said.

He said the latest timetable looks like this: Communicator 5.0 will come out in the first half of next year.

Also in the first half of 1998, Netscape will ship a separate Java browser, dubbed the Java-

Pure Java, page 94

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Carry-on rules force women to choose purse or laptop. Page 2

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What you always wanted to know about thin clients. Page 12

Market maturity needed to spur Gigabit Ethernet growth

By Bob Wallace

A FEW forward-looking users plan to dive into Gigabit Ethernet just months after it is due to be standardized in March. But many more companies plan to wait at least a year until the technology and market mature.

The much-hyped big brother

of Fast Ethernet was designed to break up bandwidth bottlenecks in campus backbone networks and provide speedier access to high-speed servers in data centers.

As standardization looms, some pioneering users are laying specific plans for Gigabit

Gigabit Ethernet, page 16

'Agents' surf Web for best online buys

By Sharon Machlis

VIRTUAL SHOPPING is becoming even more virtual now that a new wave of Internet "shopping agents" lets consumers comparison-shop online without actually visiting most merchants' sites.

The shopping agents search the World Wide Web for specific products, prices and availability. Two of the major Web search engines, Excite and Yahoo, recently announced shopping

Shopping agents, page 16

WHAT OVERLOAD? IS thrives on E-mail

CHARLES EDWARDS

Texaco's Betty Zimmerman uses electronic mail as a more efficient substitute for in-person meetings

By Barb Cole-Gomolski

AT TEXACO, INC., Betty Zimmerman uses E-mail to poll team members on the status of projects, thereby avoiding time-consuming meetings. Karen VonBargen uses E-mail to quickly distribute files to users in Universal Foods Corp.'s far-flung offices.

And Dave Asprey figures he saves two hours per day by getting most of his correspondence via E-mail. "My voice-mail box has emptied, and my E-mail box has filled up," he said.

That's the way Asprey likes it. And his opinion is shared by most information systems managers polled in an exclusive *Computerworld* survey, who say electronic mail is a godsend that has improved

E-mail, page 14

Do you ever feel overwhelmed by the amount of E-mail you receive?

Yes 34%
No 66%

Base: 250 IS managers

Source: Computerworld Information Management Group, Framingham, Mass.

NEWSPAPER

Viva E-mail!

'***'ve found that one sure way to get a rise out of an audience is to ask for a show of hands of people who wish they got more E-mail. It seems everyone is drowning in the stuff these days. I get more than 100 messages per day, and I know people who receive four times that much.

So it was with glee that I suggested to our news editors a few weeks ago that we poll IS managers to find out how they felt about E-mail. We'd surely tap in to a vein of frustration and get a great story, I said.

Boy, was I wrong.

Our survey showed that although most people do suffer from E-mail overload at times, more than six out of seven respondents reported that E-mail had made them and their organizations more productive.

Dave Asprey of Sales Mark, a Pleasanton, Calif.-based food broker, summed up the changes E-mail has wrought: "My voice-mail box has emptied, and my E-mail box has filled up."

The E-mail picture is improving.

But he estimates that has saved him two hours per day that he once spent playing phone tag.

Although I still like to complain about the advertising spam, megabyte file attachments and bounced messages that litter my mailbox, I have to admit that the E-mail picture is improving. Most of the marketing messages I get are clearly marked as such; fewer people are taking the liberty of sending me huge, unsolicited files; and messages are getting shorter and more pointed.

This week, I'll have a day full of meetings at Internet World in New York — all set up without a single phone call. Last week, we got a quote from Bill Gates via E-mail for an upcoming feature. Messaging keeps me in touch with a half-dozen college buddies spread around the country.

So, yeah, E-mail is a pain at times. But now that I think about it, I can't remember what the world was like before we had it.

Paul Gillin, editor
Internet: paul_gillin@cw.com

T H E   F I F T H   W A V E
B Y   R I C H   T E N N A N T

"I'm not sure I like a college whose home page has a link to The Party Zone!"

Carry-on controversy

▶ *Laptop users say restrictions won't fly*

By Kim Girard

WITH AIRLINES cracking down on carry-on baggage, many corporate travelers may soon need to make a choice: laptop, pocketbook or briefcase.

Fed up with jam-packed overhead bins, crammed aisles and late departures, Minneapolis-based Northwest Airlines on Nov. 21 began limiting passengers in economy class to one carry-on bag plus either a laptop, purse or briefcase.

Northwest spokesman Jon Austin said response to the new rules has been surprisingly good, with fewer complaints than expected. "Most of the reaction has been 'It's about time,'" he said.

WOMEN DISAGREE

But several women who fly coach and carry both handbag and notebook PC had a different reaction.

"I think that's ridiculous. That's absurd that the purse is a carry-on," said Beth Madorsky, a frequent traveler and managing editor of Disaster Relief.Org, an American Red Cross World Wide Web site.

On short business trips, Madorsky, like other frequent fliers, avoids the half-hour wait at baggage claim by taking a small suitcase on the plane, along with a "medium-size" handbag and notebook PC for getting work done on the way.

"It's discriminatory," said Deb McKenzie, data development director at Lexis-Nexis in Miamisburg, Ohio, who has resorted to stuffing a "tiny purse" into her computer bag. Instead of counting bags, airline gatekeepers should do a better job enforcing size limitations on carry-on bags, she said.

"I've never seen anybody use that device that says, 'If your bag is bigger than this, you can't bring it on board,'" she said.

In Lexington, Ky., one-bag advocate Lynn Hayes, chairman of the Association of Retail Travel Agents, said most airlines will likely adopt carry-on regulations if their rivals find that the rules work. But Hayes said restrictions should apply equally to business and leisure travelers, both of whom are guilty of overloading the bins.

"What's good for the goose is good for the gander," Hayes said. "I have been on flights when overhead bins have opened twice, and if you're sitting under it, it's amazing there aren't more broken necks and injuries. [Some travelers] are carrying on everything but the kitchen sink."

More than 4,000 airline passengers were injured last year by items that fell from bins, according to the Association of Flight Attendants. In addition, the airlines contend, the time-consuming tagging and stashing of extra and oversize carry-ons causes late flights and lost revenue.

SOME EXEMPTIONS

Under the Northwest rules, most frequent fliers and passengers in first class and business class are exempt from the restriction. United Airlines is also limiting economy passengers on some flights to one instead of two carry-on bags per flight, and

American Airlines is lobbying the government for industry-wide legislation mandating a limit of two carry-on bags.

Several people said they will stop flying any airline that won't allow at least two carry-ons.

"I'm worrying that they'll only allow one bag," said Albert Nurick, a partner at Data.Net Communications, a Web site developer in Austin, Texas. Nurick, who often flies American, said he sometimes totes three carry-ons. He said he doesn't want to risk losing his change of clothes on a one-day business trip.

But one laptop user, a self-described "one-bag person," said angry flyers should just get over it.

"Find something else to complain about — it's not an issue," said Mary Kay Devillier, manager of integrated systems at Albemarle Corp., a specialty chemical company in Baton Rouge, La. □

OLAP tools lead users through data maze

By Craig Stedman

INFORMATION SYSTEMS managers are begging for simpler data analysis tools as they try to spread the technology to wider groups of executives and business users.

And some vendors are starting to heed the pleas.

Do-it-yourself tools are being outfitted with more user-friendly features such as briefing book interfaces and guided analysis technology meant to help people find their way through the data maze. "The people who really can use [OLAP tools] to improve their businesses are the businesspeople," said Teresa Wingfield, an analyst at Giga Information Group, Inc. in Cambridge, Mass. But finding client tools that are intuitive enough for most mainstream users is a major problem, she said.

TOUGH SELL
Making online analytical processing (OLAP) software less daunting to business-oriented end users is a big issue for Bill Manteiga, data warehouse director at Commercial Union Insurance Co. in Boston.

Manteiga has had trouble convincing users to stick with a new installation of MicroStrategy, Inc.'s OLAP tools. He said all but about 30 of the 100 users who got the OLAP software have gravitated back to a terminal-mode mainframe application that is less powerful but faster and easier to use.

"My users need something really simple," Manteiga said. "MicroStrategy's server technology is strong, but it kind of lacks on the interface side."

Commercial Union, which plans to give the OLAP tools to another 120 users starting next month, is counting on an upgrade due next year to make the software less difficult to take, Manteiga said.

MicroStrategy, in Vienna, Va., this week plans to add reporting features such as event alerts and faster data verification to its DSS Agent client software. Company officials said Version 6.0 coming next year will support newspaper-like overviews of canned reports and other enhancements aimed at less technology-savvy users.

Other vendors also are stepping up to the plate, including the following:
- WhiteLight Systems, Inc., an OLAP start-up in Palo Alto, Calif., this week will announce software that includes wizard-guided technology for building analytical briefing books.
- Hyperion Software Corp. in Stamford, Conn., early next year plans to link its OLAP tools to packaged business applications to help end users build multidimensional "cubes" for analysis.
- Comshare, Inc. in Ann Arbor, Mich., this week plans to upgrade its Commander Decision software with guided analysis features, such as color-coded alerts and a visual user interface, which are designed to lead users to data that shows declining sales and other business problems.

Bethlehem Steel Corp. is testing the new Comshare release and expects to start using it next month for sales and marketing analysis. The guided analysis tools could help users find problem areas that are buried under good overall numbers, said Michael Ippoliti, director of decision support and analysis at Bethlehem, Pa., steel maker. □

Comshare's Commander Decision software will include color-coded alerts that can help users pinpoint business problems

R/3 management tool gets update

▶ *Object-oriented monitor eases use*

By Randy Weston

SAP AG IS revamping the system management tool used to monitor and troubleshoot its massive R/3 enterprise software.

The R/3 application, the Computing Center Management System, is similar to Unicenter from Islandia, N.Y.-based Computer Associates International, Inc. It identifies bottlenecks and disruptions in the flow of data through the system.

SAP, with U.S. offices in Wayne, Pa., had to upgrade the systems monitoring tool to support the new component architecture coming in R/3 Release 4.0, due by next summer. For Version 4.0, SAP made the unprecedented move of breaking apart the highly integrated R/3 application package. The monitor was rebuilt in an object-oriented environment so users can manage R/3 systems in single, distributed or multiple installations and manage components with the one tool.

SAP also added a program that collects data from software modules inside and outside of R/3 so they can be monitored from a single tool.

Analysts said that as enterprise resource planning systems such as R/3 become the backbone of corporate computing environments, monitoring tools will play a more important role.

Packaged application vendors that cater to the AS/400 market, such as J. D. Edwards & Co. in Denver, already provide extensive monitoring systems, said Dennis Byron, an analyst at International Data Corp. in Framingham, Mass.

"The object orientation lends itself more to systems management. It's a logical process for SAP to provide this capability, especially as it expands" R/3 to more corners of the enterprise, he said. SAP will test the management system at a handful of beta sites. The system will be available in June with R/3 4.0. □

HP eyes one-stop shopping for 9000 line

By Tim Ouellette

HEWLETT-PACKARD CO. this week will introduce a line of tape libraries aimed at its large HP 9000 installations.

The digital linear tape (DLT) libraries will provide increased performance compared with the Palo Alto, Calif., firm's current line of magneto-optical libraries. They also provide a wider range of scalability to the high end.

The idea is for HP to give customers one place to buy servers, tape storage and storage management software instead of going to high-end vendors such as Storage Technology Corp. in Louisville, Colo., for their HP storage needs.

TOTAL PACKAGE
"They are offering a very scalable lineup from the midrange to the high end," said Bob Amatruda, an analyst at International Data Corp. in Framingham, Mass. "And the [HP 9000] server offering is really a leg up for HP, because they are selling a total storage package."

The libraries give users the option of installing between two and 10 DLT 4000 or DLT 7000 tape drives and 15 to 588 cartridges. Additionally, HP's Omniback and Omnistore backup and storage management software packages link to the libraries to provide one place for storage management.

Samsung Semiconductor, Inc. in San Jose, Calif., is using one of the DLT libraries to back up its critical SAP AG R/3 applications running on the HP 9000.

"The advantage of the DLT library is the high-performance throughput of 20G bytes per hour" and the reliability of the new high-end systems, said David Her, Samsung's manager of SAP systems administration.

The libraries are shipping immediately. Base pricing ranges from $16,800 to $82,000. □

Like Medical Mutual of Ohio's Ken Sidon, you can get a new deal from your outsourcer. Managing, page 59

Web site review: How to browse for gifts on online catalog sites. The Internet, page 37

BCTel's Bob Boroski chose packaged marketing software for a new campaign. Corporate Strategies, page 35

In this issue

Demand for service-level tracking tools on the rise

By Patrick Dryden

HIGH-END ENTERPRISE management suites can be bulky and expensive. So some IS managers are turning to low-end service-level reporting tools as a shortcut to getting an overall view of the performance of their client/server networks.

Several vendors of those tools are announcing upgrades this week (see story below). Beta testers said the upgrades help them gather and compare data from diverse sources to make sure business applications work properly.

"Service is the hot buzzword, but very few tools can verify what you're delivering to users," said Bill Gassman, an analyst at Gartner Group, Inc. in Stamford, Conn. "What we're seeing here is a shift at the lower levels of the management market."

Some large organizations plan to integrate all management functions for efficiency and a unified view of performance through enterprise-scale suites.

But cheaper, simpler and more focused service-level reporting products can do the job or complement enterprise managers, Gassman said. "There's less risk of failure with these [smaller] tools because they don't try to do everything."

For example, within an hour, the Intranet Management Suite from Network Associates, Inc. in Eugene, Ore., was analyzing several aspects of performance affecting users in 23 hospital sites, said Shane Norman. He is lead network engineer at Texas Health Resources in Fort Worth.

"We needed an easy way to track traffic flow, Windows NT Server health and activity from the client perspective all in one place," Norman said.

Big management platforms are difficult to configure and a huge expense to justify, said Jim Kenyon, director of technology infrastructure at Gale Research in Detroit.

Instead, Kenyon said the directory publisher uses AlertPage Enterprise from Geneva Software, Inc. in Northbrook, Ill., to monitor the performance of its network and NetWare, Unix and Windows NT servers.

"This was just a blip on our budget, and it works today," Kenyon said. Browser access to service-level reports for the network, servers and E-mail delivery lets everyone "monitor our environment by facts, not perceptions," he said.

TEST-DRIVE

To extend its existing management software, Thomas Jefferson University in Philadelphia is testing a service-level reporting system.

Central managers currently watch servers and applications using Patrol from BMC Software, Inc. They monitor networks using Transcend from 3Com Corp.

"But we need a way to pull together all the information about our distributed environment so we can track everything like we were able to in the old data center days," said Dave Kernen, lead information technology engineer at the university.

Kernen is testing the service-level reporting system from InfoVista Corp. in Redwood City, Calif.

Vendors plan to integrate Transcend and Patrol data in the InfoVista repository, which will provide the concrete numbers needed to prove service levels to users, he said. □

Bring on the reports

The following are some of the upgrades vendors of service-level reporting tools will announce this week:

► InfoVista will broaden the scope of its namesake service-level reporting system next quarter. A new library will integrate information about servers and applications from Patrol by BMC Software.

► Network Associates will add a desktop perspective to the next version of its service-level manager.

► Concord Communications, Inc. in Marlboro, Mass., next week will ship Version 4.0 of its Network Health suite of performance reporting software. The analysis tools can run on Windows NT, not just Unix, and will include an optional service-level module. Pricing starts at about $20,000. — Patrick Dryden

BackOffice with NT won't come cheap

By Laura DiDio

MICROSOFT CORP. tomorrow will unwrap a version of its BackOffice server suite that is bundled with a high-availability version of Windows NT.

The release of BackOffice bundled with the Enterprise Edition of Windows NT 4.0 is expected to be announced at Internet World '97 in New York. The product, due in the next two months, is targeted at very large enterprise customers that need the added reliability and ease of installation the bundle offers.

But the added features don't come cheap. The 25-user version of Windows NT 4.0 Enterprise Edition, for instance, costs $3,999. By contrast, the standard edition of NT 4.0 costs $1,468. A 100-user version of BackOffice costs $18,260.

"The message to users is, 'Prepare to pay and pay big,'" said Neil MacDonald, a program director at Gartner Group, Inc. in Stamford, Conn. "Most of the value in this product will come primarily from the fault tolerance in the Microsoft Cluster Server. That will appeal to very high-end users for whom pricing isn't the major consideration."

Sid Vyas, assistant vice president of the Capital Markets Technologies unit of First Union Corp. in Charlotte, N.C., anticipates that the package will cut his administrative time by as much as 40%. Now, the bank designates one administrator to install Windows NT 4.0 Enterprise Edition and another to in-

First Union's Sid Vyas:
The NT package will cut administrative time up to 40%

stall the various BackOffice components, a process that takes two days.

"By bundling everything into a single package, I'll be able to have just one network administrator spend one and a quarter days and not worry about multiple CD-ROMs and multiple reboots," Vyas said.

He said the technical advantages — most notably the promise of near-100% uptime — are well worth the price. And he said he will be able to boost the number of users on a server running Exchange from 400 to 1,500. That means he could run two servers instead of five, which will "save us about $50,000 to $60,000 in hard-

ware costs," he said.

An MIS manager at a California-based bank with 100,000 users, who requested anonymity, said his firm, too, is seriously considering the new Microsoft offering. "The bank is heavily weighing the price premiums against the benefits of bulletproof reliability. And it looks like the 100% uptime will win out," he said.

But analysts said the high-priced bundle will appeal mainly to very high-end users.

"There's no price break here," observed Mary McCaffrey, a principal at BT Alex. Brown, Inc., a banking firm in New York. "For twice the price, users will get fewer disks and probably some extraneous features that they don't need. For all the hoopla about BackOffice, users are still mostly buying it for SQL Server and more recently the Exchange Server." □

Oracle's Web app server gets boost from new design

By Craig Stedman
and Randy Weston

ORACLE CORP. this week plans to detail a new version of its World Wide Web application server that sources said has beefed-up transaction, messaging and security features.

The application server upgrade is one of a slew of Java-oriented announcements Oracle plans to make at Internet World '97 in New York. Also on tap are fully Java-based versions of Oracle's enterprise resource planning applications, which are due to ship within 30 days.

Version 4.0 of Oracle Application Server will start beta testing this month and is scheduled to ship in the first half of next year, company officials confirmed.

The Oracle software and rival products act as middlemen in Web-based business applications, managing messaging and transaction throughput between browser users and databases.

Sources familiar with Version 4.0 said it is based on a new multithreaded architecture and an Oracle-designed object request broker that controls transactions, messages, security and other services.

The upgrade also is expected to support the Enterprise Java-Beans and Common Object Request Broker Architecture 2.0 specifications.

SEAMLESS FLOW

Be Free, Inc., a Pittsburgh-based company that operates sports and entertainment Web sites, uses Oracle's application server to track demographic information and manage links that connect Web surfers to affiliated sites where they can buy products and merchandise.

The server "makes the whole flow from the Web server to the database and back relatively seamless," said Jim Lyle, Be Free's executive vice president of operations.

Meanwhile, the new Java-based Oracle Applications 10.7 Web is the first step toward moving Oracle's packaged applications to a server-centric Web architecture. Oracle CEO Larry Ellison last month told *Computerworld* that an applications upgrade due next year may not even be offered in client/server mode [CW, Nov. 10]. □

IBM plans E-commerce think tank

By Sharon Gaudin
NEW YORK

IBM IS SLATED to announce this week that it is kicking off a think-tank type of initiative, aimed at focusing the company on electronic commerce.

IBM will officially announce the initiative this week here at Internet World '97. It will consist of think-tank meetings, seminars and conferences. The main group will consist of a business school dean, several corporate chief information officers and members of a research consortium.

IBM also will announce that developers at Ralston Purina Co. in Austin, Texas, and a group of Java developers from IBM rewrote the pet food company's custom-built schedule execution application in 100% Pure Java. The project used IBM's VisualAge for Java and DB2 database software.

And IBM will announce that retailer Eddie Bauer, Inc. used IBM tools and Java to tie together its stores, catalog and Internet site. The project, which was created with IBM's VisualAge for Java, IBM network computers and DB2, is focused on building a common computer system for tighter control of inventory and target marketing.

Other announcements expected at Internet World include the following:

Tower Technology Corp. in Austin will roll out an early access release of its Java-based application execution environment, TowedJ 2.0. It is expected in next year's first quarter.

Digital Equipment Corp. is upgrading its microcommerce system, MilliCent, designed to more easily enable Internet users to buy or sell products for one-tenth of a cent, up to $5.

Sun Microsystems, Inc. is expected to update users on its Java for the Enterprise strategy. Sun announced earlier in the year that it would focus on moving Java technology — applets, applications and JavaBeans — back from the client to the server. A spokesman for the company said Sun will update that plan.

Sun also will announce Java QuickStart, a service to help companies accelerate their Java-based development. The service includes a two-week mentoring workshop in which developers can tutor with Internet and Java specialists from Sun.

The Vision Factory in New York will show off its Cat@log Version 2.5, a software package for building and maintaining online storefronts. The new version will include updated shipping, ordering, taxing and payment features. □

Lotus eases Web development

By Barb Cole-Gomolski

LOTUS DEVELOPMENT CORP. will announce this week at Internet World '97 in New York plans to integrate its Domino server with the Fusion Web development tool from Net-Objects, Inc.

The move will give developers an easier tool to build Domino-based World Wide Web applications than the Notes development environment. It also will give seasoned Notes devotees a Web tool that could ease Web site creation and application prototyping.

Lotus parent IBM bought a majority interest in Redwood Shores, Calif.-based NetObjects last March. Lotus, in Cambridge, Mass., already has bundled the tool with its low-end Lotus Go Web server. Lotus officials confirmed that tighter links between NetObjects and Domino are in the works, but they didn't provide specifics.

Though users said Lotus has come a long way in improving the Web development capabilities of Domino, independent Hypertext Markup Language (HTML) authoring tools are still attractive.

"Even our experienced Notes developers tend to gravitate to-

ward using stand-alone tools for Web development," said Michael McGhee, director of administrative computing at the University of Las Vegas, which has a campuswide Notes license.

But until now, there has been no way to access Domino services from an HTML tool. The integration work, expected to be completed by early next year, will give NetObjects developers access to such services.

David Marshak, an analyst at Patricia Seybold Group in Boston, said a lot of Notes developers see value in adding Net-Objects to their repertoire. But "this may be even more important on a psychological and political level because it further signifies that Lotus is opening up Domino," he said. □

FRANKLY SPEAKING

Forget yellow brick dead end

FRANK HAYES

THE YELLOW BRICK ROAD is looking more and more like a dead end.

You know the one. Microsoft sketched it out for you just a year or three ago.

According to that plan, you should already be into the 32-bit, Internet-enabled, distributed-computing world of Windows NT — the next best thing to the Emerald City of Oz.

Or maybe your yellow brick road map came from Sun Microsystems or Oracle, showing a highway paved in easy-to-use Java and easy-to-run network computers. Or perhaps it came from IBM or SAP or Corel or Lotus or Novell or even Apple.

Whoever it came from, the map undoubtedly shows a clear, straight path to Oz.

Trouble is, now that you're halfway there, you're staring at a sign that says "Your IS Dollars at Work" and a bunch of munchkins laying gold bricks while you cool your heels.

Windows NT 5.0 is delayed — again — and so is Windows 98. Java inches forward. Network computers are postponed. Promises aren't exactly broken; they're just not going to be kept on the original schedule.

We've all been through this

Don't wait for vendors — solve company IT problems yourself.

before, of course. Overreaching vendor promises are nothing new, and neither are product delays.

Now, though, there's a difference. Today we can't afford those delays.

We've made plans to soup up the sales force, crank up the quality of customer service and slash user support costs.

We've got tactical needs and bottom-line business targets that depend on our ability to deploy systems and access data and simplify use. These are real, solid business plans — targets our organizations are depending on us to hit. But, more and more, we can't hit them because the plans themselves depend on vendors who overpromised and underdelivered.

We've gotten our wish: IS really does matter to the business. Now we're discovering we can no longer afford to trust IS — and the business — to our vendors and their plans.

USER, HEAL THYSELF

What to do? Throw away the road map. Get off the yellow brick road. Forget about Oz, and start living in the real world.

Look, even with the best of intentions, vendors don't know your business. (*You* have trouble figuring out exactly what your users do — how could vendors have it nailed better?) Vendors don't have your priorities for putting IT to work for your users, and they can't deliver exactly what you need, when you need it.

And what they finally deliver can't give your users a competitive advantage — because they'll deliver it to *everybody*, including your competitors.

Product road maps are seductive, but they'll never show you someplace you really want to go. All they can show you is where a vendor wants you to go. And the longer you stare down that road, the more likely it is that highway hypnosis will set in.

You don't need a "technology path." You need tactical solutions that will pay off — and you need them right now.

But what if your quick-hit tactical fixes don't stand the test of time? Who cares — they've already paid for themselves. If you've got to rip them out later to install something better, you've gotten your money's worth.

Or what if you fall behind and you're not ready for The Next Big Thing? So what? Half of business users still run Windows 3.1. Few IS shops have gone beyond the dancing-coffee-cup stage with Java. Mainstream IS is always years behind the road maps — and technology only gets cheaper over time.

Yeah, that yellow brick road *is* a dead end. Quit waiting for vendors' solutions and start solving your organization's IT problems yourself. Your fixes won't be as pretty as that shimmering Emerald City in the distance. But for your business, they'll make a lot more green. □

Hayes is Computerworld's West Coast bureau chief. His Internet address is frank_hayes@cw.com.

SHORTS

Teleworking gains momentum

The number of North American companies that let their employees telecommute cracked the 50% mark this year, according to a poll of 300 senior executives in various industries. Fifty-one percent said their companies have either permanent or pilot telecommuting programs, up from 42% a year ago. The survey, done by a workforce research organization funded by Olsten Corp. in Melville, N.Y., also found that one-third of the responding companies use telecommuting to attract potential employees. Three-quarters of the respondents said they expect to widen their telecommuting programs in the future.

Dollars flow Juniper's way

Router start-up Juniper Networks, Inc. continues to attract venture capital from what is turning out to be the Who's Who of the networking industry. The Mountain View, Calif., firm last week received a $6 million infusion from long-distance carrier Qwest Communications International, Inc. and AT&T Ventures. Juniper previously raised $56 million from Lucent Technologies, Inc., 3Com Corp., UUnet Technologies, Inc., Nortel, Inc. and others. Juniper is building a system that will eliminate congestion on the Internet. Cisco Systems, Inc. is shipping a system designed for the same purpose. Juniper said its offering will ship next year.

Rockwell, 3Com make a pact

Rockwell Semiconductor Systems and 3Com Corp., rivals in a battle over 56K bit/sec. modems, last week said they had reached a tentative agreement to produce modems using a common standard. The companies said the pact means users won't have to choose between the competing X2 technology from U.S. Robotics

and 3Com, and K56flex technology from Rockwell. The companies are scheduled in the first quarter of next year to start making the modems that use a new V.pcm standard. Users will be able to upgrade their 56K bit/sec. modems to run on the new standard.

HP, banks target E-commerce

Hewlett-Packard Co., its secure payments subsidiary Verifone, Inc. in Redwood City, Calif., and outsourcer EDS Corp. have joined a group of large financial institutions to launch an electronic-commerce service for banks. The companies will work with Citibank, Visa International, Inc. and Royal Bank of Canada to deploy Internet commerce and smart-card technologies.

Gates: Bank legacyware coming

Speaking via satellite to 9,000 attendees at a banking conference in New Orleans last week, Microsoft Corp. Chairman Bill Gates said the company plans to create a framework to let bank applications share data with one another and with legacy systems. Microsoft will hold a developers conference on the subject at its Redmond, Wash., headquarters in February, he said. A developers kit is slated to ship late next year. Digital Network Architecture-compliant products will follow in early 1999.

Jasmine: It's a go

A full year behind the original delivery schedule, Computer Associates International, Inc. this week plans to launch its Jasmine object database at Internet World '97 in New York. Jasmine, which is aimed at multimedia and World Wide Web applications involving complex forms of data, has been delayed three times by Islandia, N.Y.-based CA. The software is based on technology developed by Fujitsu Ltd. and supports either a native

development environment or a third-party set of Java applet bindings.

Seagate releases BlackWidow

Seagate Technology, Inc.'s software unit has unveiled a promised upgrade of its Crystal Info reporting software, code-named BlackWidow, that adds built-in support for Internet-based push technology. Crystal Info 6.0 also lets users put relational data into multidimensional "cubes" and run drill-down queries and calculations, Seagate officials said. Pricing starts at $299 per user for the base reporting product.

SHORT TAKES Open Market, Inc. in Cambridge, Mass., said it will fold United Parcel Service of America, Inc. shipping and tracking information into its Transact electronic-commerce software starting in March. ... San Diego-based **Qualcomm, Inc.** this week will announce Eudora Pro 4.0, an upgrade of its Internet electronic-mail client that includes new mail management and collaboration features. ... **America Online, Inc.** in Dulles, Va., said it plans to let members send and receive E-mail using Microsoft Corp.'s Outlook Express instead of AOL's E-mail package. ... **ITXC Corp.** in North Brunswick, N.J., said it will launch in January a wholesale Internet phone service that allows use of traditional telephones on both ends. ... Only 58% of the top 1,000 companies in Asia are running sites on the World Wide Web, far below the 81% rate in the U.S., according to a poll released by **International Data Corp.** ... **IBM** announced it will begin to support at no charge a virtual private network building-block technology, Layer 2 Tunneling Protocol, on its 2210 Nways multiprotocol routers by year's end. ... **Microsoft Corp.** released SNA Server 4.0, which supports 30,000 simultaneous sessions, up from 15,000 in Version 3.0. The server costs $2,499.

NEWS

Sungard boosts new site with Skyline

▶ *Chooses Hitachi mainframe for data recovery*

By Tim Ouellette

SUNGARD RECOVERY SERVICES, INC. has installed a Hitachi Data Systems Corp. Skyline mainframe in its huge new Philadelphia MegaCenter — the first such use of a Skyline for disaster recovery.

SunGard is one of an increasing number of user sites that has chosen Skyline for its heavy-duty computing needs because it can run large 150-MIPS processors instead of a cluster of smaller IBM boxes.

Even if SunGard customers don't have a Skyline, "we will need the larger engine size to run their business in case of disaster," said Rick Toler, vice president of Eastern operations at the Wayne, Pa., company.

The move shows that even as users successfully install IBM's parallel sysplex mainframe clustering scheme, which is focused on mainframes with 65 MIPS CMOS processors, there is still a voracious user demand for large processing engine sizes in the mainframe world.

SunGard is installing an eight-CPU Skyline with a total of 975 MIPS and adding terabytes of additional disk storage. That brings the total processing capability of the 64,000-sq.-ft. Philadelphia facility to 2,200 MIPS.

Skyline on the horizon

Challenges to Hitachi's Skyline in the high-end mainframe market

▮ **Parallel sysplex success**

▮ **CMOS processors size gains**

▮ **Market saturation**

▮ **OS/390 operating system restraints that limit Skyline power gains**

▮ **Single-task applications possibly decrease in number**

Source: Gartner Group, Inc., Stamford, Conn.

Skyline could help in the case of a regional disaster where several customers are affected, Toler said, "because we may have to run them all on a physical processor, and now we can do this all on the one Skyline."

But SunGard also runs a parallel sysplex, and Skyline will become an integral part of that cluster, Toler said. The clustering technology provides workload balancing over multiple IBM-compatible mainframes. But in very large applications, it can't beat the power of a large CPU such as the advanced CMOS emitter-coupled logic found in Skyline.
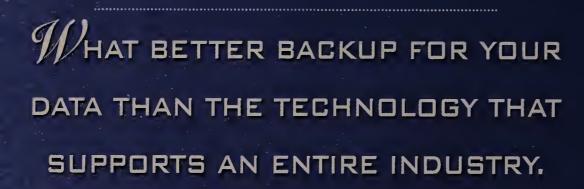
THE FUTURE

Eventually, Skyline will start to lose some of its advantages over parallel sysplex, according to research from Gartner Group, Inc. in Stamford, Conn. (see chart).

October's huge stock market trading volumes highlighted the capability of parallel sysplex installations.

At Hewitt Associates, Inc., a benefits outsourcer in Lincolnshire, Ill., the six-system mainframe cluster easily absorbed a 62% increase in system demand "without a burp" as customers called to track the value of their 401(k) plans, said Dan Kaberon, Hewitt's sysplex project manager.

"This was certainly the biggest surge we ever took. Everybody put on helmets to get ready to firefight, but nothing bad ever happened," Kaberon said. □

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Thin-client lead still up for grabs

▶ *Network computing has yet to take off, but analysts say the market has lots of potential*

By April Jacobs

A KLATCH OF Java-sipping vendors struck a chord with users last year when they promised a new breed of thin-client devices that would cut the cost of ownership and offer an alternative to Windows.

But Microsoft Corp. and Intel Corp. quickly responded with their own thin-client strategies, which are aimed at giving users those same cost benefits but with a strictly Windows view.

NEWS ANALYSIS

Heading into 1998, network computers, NetPCs and Windows terminals are still struggling to get out of the starting gate, and analysts say a frontrunner has yet to emerge.

However, the market is an important one. Neil MacDonald, an analyst at Gartner Group, Inc. in Stamford, Conn., predicts those devices will account for about 20% of the desktop market by 2001.

TWO SCHOOLS

The network computer camp and the NetPC/Windows-based terminal camp take fundamentally different approaches.

Sun Microsystems, Inc. and IBM say users want to lower costs and be able to run multiple types of applications and operating systems, particularly Java.

Observers say that is why users looking for true network computing, which offers local Java and no need for Microsoft, won't find it in either the NetPC or Windows-based terminals.

Microsoft takes the position that users mostly want access to Windows applications, but in a manner that allows them to cut costs.

Those machines will be popular for users who want simple

hardware that runs Windows without needing third-party access.

On the network computer side, IBM is shipping hardware and software for its Network Stations. But Sun is late with its JavaStation and is busy dealing with a slow, buggy Java operating system.

Meanwhile, Microsoft is a year away from delivering the multiuser, server-based version of its Windows NT operating system that is key to its newly announced Windows-based terminals.

Earlier this year, Microsoft did offer up a NetPC that features advanced management software.

ON HOLD

Some companies are already trying out network devices, but most users are holding back.

American Eagle Airlines, a division of Dallas-based AMR, Inc., committed this summer to replacing its aging ticket-counter terminals with hundreds of IBM Network Stations.

The IBM Network Stations will allow the company to provide users with access to new and old applications and won't require the company to retool its operations to a PC environment. The savings could be significant, according to Duane Stanley, American Eagle's director of communications and systems.

POTENTIAL PAYOFFS

Fastenal Co. based in Winona, Minn., is beta-testing Windows-based terminals and Hydra, Microsoft's Windows-based server. Scott Lien, director of information technology, said he can cut overall costs by 50% compared with PC users.

Lien said the new devices and software require minimal setup time and rarely experience problems. Plus, users who are already familiar with their PC-based applications require little training on the new machines.

Lien is considering installing about 3,000 Windows-based terminals across several hundred stores nationwide. □

HP creates E-business software unit

By Jaikumar Vijayan

DELIVERING MORE focused software and services for the online realm is the goal of Hewlett-Packard Co.'s newly minted Electronic Business Software Organization.

In a reorganization aimed at doubling its software revenue to $2 billion in the next two years, HP last week said it will consolidate all software sales operations — now scattered throughout the company — into a separate unit.

The unit, which will have 250 people when fully staffed, will have a two-pronged focus. One will be to deliver a series of electronic-commerce products and services targeted at applications such as supply-chain management, business-to-business communications, customer service, sales, marketing and business-process management via the World Wide Web. The other will be to continue delivering a range of information technology service management software based on HP's OpenView management technology.

"There is a lot of value in companies like HP offering to help customers put up [electronic-commerce] sites," said David Krauthamer, MIS manager at Parker Hannifin Corp., a $2 billion automotive retailer in Rohnert Park, Calif.

"There are huge challenges in putting together large [electronic-commerce] applications ... in terms of security, design and flow, management and just the large transaction loads involved," Krauthamer said.

TECHNOLOGY ON TAP

As part of its new focus, HP is getting ready to roll out customizable software technology and tools that will let corporations quickly deploy large electronic-commerce applications.

The products will be based on a range of existing HP technologies, including HP OpenMail for messaging, HP OpenView for management, HP Praesidium for Internet-based security, HP AdminFlow for automating administrative processes and HP SmartContact for customer service delivery. HP will also package and reuse technologies tools and services from previous systems integration engagements with large companies. □

THE SKINNY ON THIN CLIENTS

	Network computers	NetPCs	Windows-based terminals
In a nutshell	Larry Ellison and Scott McNealy's excellent adventure	Bill Gates wakes up and smells the Java	Windows for "dumb-ies"
What they are	Devices without floppy drives that run Java locally or from a server. Must be able to run the Java Virtual Machine (JVM) locally.	PCs without floppy drives that support Microsoft's Zero Administration for Windows initiative to improve administration of desktops. Can run applications locally or from a server.	Similar to traditional dumb terminals, based on Microsoft's T-Share protocol. Designed to work with Microsoft's Windows-based server, code-named Hydra.
Upside	Aims at reducing total cost of ownership and simplifying administration and security. Can run Windows and non-Windows applications.	Supposed to cut cost of ownership. Users can run all their familiar PC applications.	Designed to run all applications and operating systems from the server. Centralized administration and support.
Downside	Java applications are just now emerging. Java operating system is slow and buggy. Forces CIOs to make the scary move away from Wintel standard.	Doesn't offer platform independence.	No local browser, no local applications. Can't run the JVM locally.
Who makes them	Network Computing Devices, IBM, Wyse Technology, Neoware Systems (formerly HDS Network Systems), Oracle and Sun Microsystems. All of these devices are shipping except for Sun's, which is expected to ship Q1 1998.	Dell Computer, Compaq Computer, Gateway 2000, Hewlett-Packard, Packard Bell NEC and Texas Instruments. All are shipping now.	Boundless Technologies, Tektronix, Wyse Technology, Network Computing Devices. They won't work as designed until Hydra ships with Windows NT 5.0 next year.
Price	$600 to more than $1,000	$800 to $3,000	$650 to $850
Target audience	Users of terminals and PCs	PC users running Windows applications	Terminal users

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Bankers wait for online profits

> ▶ *Service is money pit, but key to long-term survival*

By Thomas Hoffman
NEW ORLEANS

WITH ONLINE banking unlikely to generate any profits in the next two to five years, the nation's top retail banks are bracing themselves to forgo short-term profits in order to attract and keep their most profitable customers.

That was a major point of agreement among some leading banks gathered here at the Bank Administration Institute's Retail Delivery '97 conference. They said an online presence is looking more like the key to long-term survival.

The competitive necessity of offering online services is also helping bank technology chiefs with the task of cost-justifying to top brass millions of dollars in online banking investments.

Faced with a shrinking customer base, "the problem is not whether we can make money [with online banking], but whether we can afford not to do

ELECTRONIC COMMERCE

this," said Dudley Nigg, executive vice president at Wells Fargo & Co. in San Francisco.

Between 1980 and 1996, the banking industry's share of customers' financial assets fell from 36% to 23% as higher-yielding investments such as mutual funds drew consumer deposits out of the vault.

Bankers taking the long-term view say online banking can help them identify and cross-sell products to their most profitable customers more effectively than in the past. Currently, bankers lose money on eight out of 10 retail customers, according to First Manhattan Consulting Group in New York. Meanwhile, 10% of retail customers generate 60% to 70% of the profits.

So far, banks have generated incremental sales by offering transaction services such as processing customers' electronic bill payments. Fleet Financial Corp. in Boston expects that revenue to help make online bank-

ing profitable two years from now, said Senior Vice President Robert B. Hedges Jr.

But the historic stranglehold banks have on the payments system is being threatened by Microsoft Corp., whose June partnership with First Data Corp. formed a unit to process electronic bill payments. Last week, that unit added Wells Fargo to the list of brand-name banks that are planning to provide the service to customers and take a share of the fees.

Some bankers figure the real money to be made in online banking will be through selling "higher-margin" products such as mutual funds, said James Dixon, president of Nations-Bank Services, Inc., the information systems and operations arm of NationsBank Corp. in Charlotte, N.C.

Fleet, for example, is hammering out a partnership with discount brokerage Quick & Reilly Group, Inc. to offer online investment products, which it hopes to make available to customers next year, Hedges said.

Others point to the savings

Online banking "is probably not profitable in any institution today."

– DUDLEY NIGG
WELLS FARGO

that lower-cost PC and Internet-based transactions can deliver. It typically costs a bank $1 to have a teller handle a deposit. Internet transactions, by contrast, cost as little as 1 cent.

Huntington Bancshares, Inc., which invested $10 million across all of its alternative delivery channels this year — including Internet banking, automated teller machines and electronic kiosks — improved its ef-

ficiency ratio by 25% this year, said Bill Randle, executive vice president at the Columbus, Ohio, bank.

CoreStates Financial Corp., pending its acquisition next year by First Union Corp., expects its 1998 Internet banking rollout to slash transaction processing costs by "millions of dollars" annually, said Linda Weber, senior vice president at the Philadelphia bank. □

IS thrives on E-mail

their productivity.

Despite the bulging E-mail in-box they confront every morning, despite the spam and despite the junk messages, two-thirds of 250 IS managers polled said they don't feel overwhelmed by E-mail.

In fact, 86% of the respondents said E-mail has made them more productive. And IS managers are adding E-mail applications that will further boost messaging traffic.

Workers at Texaco soon will be receiving E-mail alerts that remind them about project due dates. The oil giant is using E-mail not only to transmit information, but also to manage the flow of information throughout the company, said Zimmerman, Texaco's manager of messaging in Belaire, Texas.

Instead of calling a meeting to assess the status of a project or conduct a feasibility study, executives can poll groups of workers via E-mail, Zimmerman said. "[E-mail] has proven to be far more efficient than in-person meetings," she said.

As a result, E-mail usage at Texaco, as in most companies, is

skyrocketing.

The *Computerworld* poll indicates that E-mail volume is up more than 58% since last year. Respondents receive an average of 24 messages per day, compared with 14 messages per day a year ago. They send about 11 messages per day, up from 8 per day last year.

That translates into nearly an hour and a half spent reading and responding to E-mail each day, a substantial jump from the 48 minutes spent on E-mail processing a year ago.

The counterintuitive finding of the survey is that, despite spending more time dealing with E-mail, IS managers are getting more work done.

"I'm now doing one-half to one-third of my software upgrades over E-mail," said Asprey, a systems manager at Sales Mark, a food broker in Pleasanton, Calif. Prior to widespread use of E-mail at the company, Asprey had to visit individual desktops to upgrade software.

Asprey said E-mail is a more concise and effective way to communicate than voice mail.

"Even people who can't write

How many E-mail messages, on average, do you receive each day?

24
- - - -

One year ago, how many E-mail messages, on average, did you receive each day?

14
- - - - -

How many E-mail messages, on average, do you send each day?

11
- - - -

One year ago, how many E-mail messages, on average, did you send each day?

8

Base: 250 IS managers

Source: Computerworld Information Management Group, Framingham, Mass.

very well are better in E-mail than they are on the phone," Asprey said. And unlike rambling voice-mail messages, "I can quickly glance at an E-mail message and decide if it's important," he said.

Angel Stahl, MIS supervisor at Fisher Scientific Co. in Indiana, Pa., said she saves several hours each week by sending in-

formation via E-mail to the 45 members of the Computer Associates International, Inc. user group that she heads. "If I had to send this stuff in the mail, I'd be looking at a major effort," she said.

For VonBargen, manager of information services at Universal Foods in Milwaukee, E-mail provides a way to distribute files efficiently to remote users.

"In the past, people would take a printed report and rekey the data into their computers," she said, because they didn't want to wait for a disk to get to them in the mail. With E-mail, they can get their file in minutes, VonBargen said.

The built-in scheduling capabilities of Texaco's Microsoft Corp. Exchange system have made it a lot easier to set up meetings, Zimmerman said. E-mail has also greatly improved the ease with which Texaco can communicate with people outside the company, she said.

Using E-mail is a lot more efficient than trying to reach people in different time zones by telephone, Zimmerman added.

Mark Levitt, an analyst at International Data Corp. in Framingham, Mass., said most users have ways to combat E-mail overload. They include using fil-

ters that are built in to many E-mail clients and taking advantage of spam blocking features. Using text retrieval to ferret out important messages and public/private folders to sort stored messages also helps, he said.

NO RSVP

Another trick to reducing workload is to resist the urge to reply to every message. The survey showed that respondents answered only about 52% of their messages. They said only about 63% of the messages they get are useful to them.

Besides deleting unimportant messages, users are encouraged to be cautious about subscribing to list servers, which can generate dozens of messages each day, Zimmerman said.

"When we think about E-mail and productivity, we have to think not only about the amount of time we spend reading and answering E-mail, but about how long it would have taken us to do the same work manually or with the phone," said Ron Kizior, assistant professor of information systems at Loyola University in Chicago.

"When you look at it that way, you can see how E-mail has greatly improved things," he said. □

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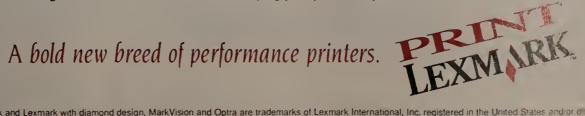
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Shopping agents may ease online sales

agents, joining several other such services on the 'net.

Agents are likely to make the Internet an even more price-driven medium, said Vernon Keenan, a senior analyst at Zona Research, Inc. in Redwood City, Calif. "They have the potential to be very popular. They do the two things that drive people to shop on the Web: save time and save money," he said.

Shopping agents are still in their early stages, though. They typically are limited to a few merchandise categories and a handful of sellers. But they already have progressed markedly from earlier, client-based versions that showed up only a few

months ago, analysts said.

To use a shopping agent, users visit one of the new Web pages and type in the name of, say, a specific book, movie or CD. The agent then searches relevant online retail sites in its database and returns a list of sites that sell the item and how much it costs.

"I buy old movies and PC equipment from them, finding it saves a lot of time," said John Cilio, president of the Intranet Institute in Atlanta.

Some retailers may face a daunting task integrating an Internet front-end system with the inventory back end, cautioned Kate Delhagen, an analyst at

HOW SHOPPING AGENTS WORK

▌ Consumer enters desired product into shopping Web site form (no software download or plug-in needed)

▌ Shopping agent searches the Web for product pricing and availability

▌ Results are displayed with vendor site and price, along with a purchase link

Forrester Research, Inc. in Cambridge, Mass.

Agents won't display information from companies that can't offer up-to-date pricing and availability data in a format those agents can read. Such companies could miss out on

potential sales if they don't offer that data online.

Yet those that are ready could reap a rewarding jump in sales. By making it faster to find products at attractive prices, shopping agents will "make it easier for people to spend money,"

Delhagen said. On the downside for Web businesses, they also make it easier for surfers to bypass parts of retailing sites that might have interested them, which would limit impulse buying and ad viewing. Forrester's most recent Internet shopper survey showed that about 20% of online purchases were unplanned.

QUESTIONS LOOM

Customers who look at price lists alone can't check things such as delivery times and customer service, said John Waddell, manager of information systems at Toronto-based Videoflicks Canada Ltd., a discount video seller. "It's not a fair comparison, even when we're cheap," he said.

There are also questions about whether such agents fairly survey all available products or just a select handful, said Bruce Pettyjohn, president of Artistic Visions, Inc. in Campbell, Calif., operator of the CDworld Web site (www.cdworld.com).

Yahoo, Inc.'s searcher, part of its Visa Shopping Guide (shopguide.yahoo.com), comes from Junglee Corp. in Sunnyvale, Calif. It polls five to 10 sites for books, music, electronics and toys. More categories are planned.

The Excite, Inc. agent (http://jango.excite.com/cf/index.html) uses Jango technology acquired when Excite bought Netbot, Inc.

It polls various relevant sites and displays resulting products, sites and prices, along with a "buy" button for each listing.

For now, only computer-related products and movies are available, but other categories such as sports, home, garden, food and gifts are in the works.

Excite is investigating ways to generate revenue on its own site from the agent, perhaps by offering targeted ads that could help spur more impulse buys from a returned product list, said Joe Kraus, senior vice president and co-founder of Excite.

Online retailers said they are watching developments in the field.

"There's a lot of buzz about that," said Judy Neuman, vice president of interactive media at Eddie Bauer, Inc. in Redmond, Wash.

She sees tools such as Jango as useful for consumers and positive for retailers but also acknowledged they could limit consumer browsing on a merchant's site.

"Hopefully, they won't completely bypass it," she said.□

Users await Gigabit Ethernet standards

Ethernet use.

"We'd like to have it in by the end of 1998, depending on product availability, with the primary reason being that growth on our LANs has increased 400% in the last two years," said Tom Reynolds, a senior network engineer at GMAC Commercial Mortgage Corp. in Horsham, Pa. "We also need it because we're adding high-bandwidth applications such as video streaming and videoconferencing."

Because the technology is evolving, Reynolds said GMAC would first test Gigabit Ethernet

equipment in a pilot network before moving it to a production network. "We do this with every new product. We stress-test everything to see how it performs."

Rob McKenna said there is a chance his company will be using Gigabit Ethernet technology next year, too.

He put Gigabit Ethernet uplinks, devices that link large switches at 1G bit/sec., in his 1998 budget.

"We could use the technology to link switches. But if it's challenged, it's the first item that's coming out [of the budget],"

said McKenna, vice president of global network engineering at Sumitomo Bank Capital Markets, Inc. in New York.

wouldn't happen sooner unless we suddenly saw big demand for multimedia applications," Layton said.

Nick Sarris said he can't see toying with Gigabit Ethernet for at least a year.

"First we have to wait on the standard and watch what

GIGA'S COMING	
Gigabit Ethernet standard	Estimated arrival
Single- and multimode fiber	March 1998
Twisted-pair (Category 5)	End of 1998

"Gigabit Ethernet is still in the hype stage, and you can expect that the first products will have some bugs that need to be worked out," McKenna said. "We'd like to wait until prices come down. It may be after '98 before we start using Gigabit Ethernet."

For every user planning to use the technology next year, Computerworld found two who are watching and waiting.

Most users aren't knowledgeable about Gigabit Ethernet and are "12 to 18 months away from using it," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consulting and research firm.

Eastman Kodak Co., for example, has no immediate plans to use Gigabit Ethernet.

"It's not ready for prime time, especially given that it's not even standardized yet," said Trey Layton, a global infrastructure coordinator at the Rochester, N.Y., camera and film giant.

"I can, however, see implementing it in the core of our network 'round about mid-1999. It

happens after that," said Sarris, the manager of technical operations and communications at Thomson Financial Services in Boston.

"We'll consider using it when it comes of age, meaning when the products settle down and their costs begin to drop," said Judy Wood, an assistant director of network services at Johns Hopkins University in Baltimore. "We'd want to get products into our labs and see what throughput we can achieve."□

Others stand by ATM

Gigabit Ethernet wasn't an available option when Sally Grant and Chuck Rush had to pick a backbone network technology.

"Had Gigabit Ethernet started two years ago and been mature now, we would have looked at it," said Grant, assistant vice president of network development at United Service Automobile Association (USAA) in San Antonio. "We'll still, however, keep an eye on it and deploy it where it makes sense."

Asynchronous Transfer Mode (ATM) networking made better sense for USAA because the insurer needed to support multimedia applications, including voice. Gigabit Ethernet currently supports data only.

"It's certainly not a replacement for ATM, but if you have an Ethernet legacy, it's an attractive option," Grant said. But USAA was a Token Ring shop.

Chuck Rush has been an ATM backer for years.

"We rolled out ATM in our production network in December 1996 and are extremely pleased with the technology," said Rush, global network architect at McDonald's Corp. in Oak Brook, Ill.

When asked if he would consider using Gigabit Ethernet in a new installation today, Rush said, "I'd run an ATM line into the building. It wouldn't take any decision time at all."

— Bob Wallace

MCI strengthens California net backbone

▶ *Offers unprecedented 80G-bit/sec. transmission rates*

By Matt Hamblen

MCI COMMUNICATIONS CORP. today will announce that it has doubled its network backbone capacity in Southern California, potentially giving business users faster Internet and wide-area network connections.

MCI officials said 170 miles of the carrier's national network backbone — from Los Angeles to Rialto, Calif. — would offer up to 80G bit/sec. voice and data transmission rates on a single strand of optical fiber.

Users and industry analysts called MCI's move technologically impressive, because no other carrier has broken the 40G-bit/sec. rate. At the same time, the news fits into an ongoing battle among vendors to offer bigger, faster network services to remain competitive.

> "Any increase in capacity the carriers offer benefits everyone."
> – Peter C. Gunn, UPS

"That kind of news impacts how MCI will be evaluated for our future frame-relay and video transmission needs," said William Lazarus, director of telecommunications at Horizon/CMS Healthcare Corp. in Albuquerque, N.M. The company is managing a combination of networks around the U.S. as it merges with HealthSouth, Inc. in Birmingham, Ala., Lazarus said.

SERVICE TO EXPAND

Analysts said MCI's added capacity will be useful in coming months as the Washington-based company and other carriers begin to allow businesses to reserve bandwidth dedicated for purposes such as videoconferencing. MCI officials said MCI will bring comparable service to other business centers in the coming months but declined to specify.

"Obviously, any increase in capacity the carriers offer benefits everyone," said Peter C. Gunn, a telecommunications manager at United Parcel Service of America, Inc. in Mahwah, N.J. UPS uses Sprint Corp. in Kansas City, Mo., for its data network service, but Gunn said MCI and other carriers are upping the bandwidth ante — which is ultimately good for end users.

Matthew O'Brien, a past president of the Communications Managers Association user group in Morristown, N.J., said MCI and other carriers have been working to compete with Qwest Communications International, Inc.

Denver-based Qwest last week said it has 3,350 miles of high-capacity fiber network in service between California and Indiana and will sell bandwidth to telecommunications carriers and businesses that are interested in the services being offered by Qwest, which has plans to establish a nationwide fiber network by 2000.

An MCI spokesman said his company's announcement "shows that MCI's optics aren't the dinosaur that Qwest believes they are."

The announcement also shows that MCI is "in the bandwidth arms race," but the added capacity won't be meaningful until next year, said Eric Paulak, an analyst at Gartner Group, Inc. in Stamford, Conn. That is when carriers will begin to offer guarantees for different levels of service, from data transmission to bandwidth-hungry live videoconferencing, Paulak explained. □

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Universal bus awaits Windows 98 drivers

▶ *Laptop port sees the first signs of adoption process*

By Kim Girard

USERS HAVE GAINED a glimmer of hope that the Universal Serial Bus (USB) ports on the back of their laptop computers might be useful someday.

Most notebook PCs have come equipped with a USB port since mid-1997, but most vendors aren't yet making the printers, scanners, cameras, mice or monitors that comply with the USB standard.

But at Comdex/Fall '97, held recently in Las Vegas, a handful of vendors displayed USB-compliant devices. They included Eastman Kodak Co. in Rochester, N.Y.; Intel Corp. in Santa Clara, Calif.; Logitech Corp. in Fremont, Calif.; and Connectix Corp. in San Mateo, Calif. And 3Com Corp. announced that its new 56K bit/sec. voice/fax modem will have USB support.

However, the "one-size-fits-all" port isn't expected to be easy to use until end users upgrade to Microsoft Corp.'s Windows 98, which has the necessary drivers to support USB devices. Windows 95 doesn't fully support USB.

The advantage of USB is that a single I/O port can support a wide variety of peripheral devices, and a user can daisy-chain devices off the port. That eliminates the need for multiple serial and parallel ports to connect devices such as modems and printers.

A sampling of USB-friendly PC devices

Vendor/product	Description	Price
Connectix QuickCam	Digital video camera for the PC	$99
Connectix QuickClip	A device that captures and saves video	$99
Logitech Page Scan USB	Integrated video camera and color scanner	$230
Kodak DVC 300	Digital video camera	$200

"This is one of those standards that you really want to win because it's just going to simplify everything," said Ken Dulaney, an analyst at Gartner Group, Inc. in Stamford, Conn.

EASIER CONFIGURATION

A USB standard would effectively make connecting to a laptop idiot-proof, said Matt Hayden, technology specialist at TSG Ventures, Inc. in Stamford, Conn.

On the management side, he explained, USB would erase several configuration hassles, such as setting user addresses and dealing with interruption requests.

USB also could eliminate the need to open the machine, reboot or use special cards when adding hardware. It boosts data transfer rates to 12M bit/sec.

Support staff should see some relief when users start taking advantage of USB, Dulaney said. "Serial ports are one of the areas where you get the most support calls," he said. "Conflicting ports are really a pain."
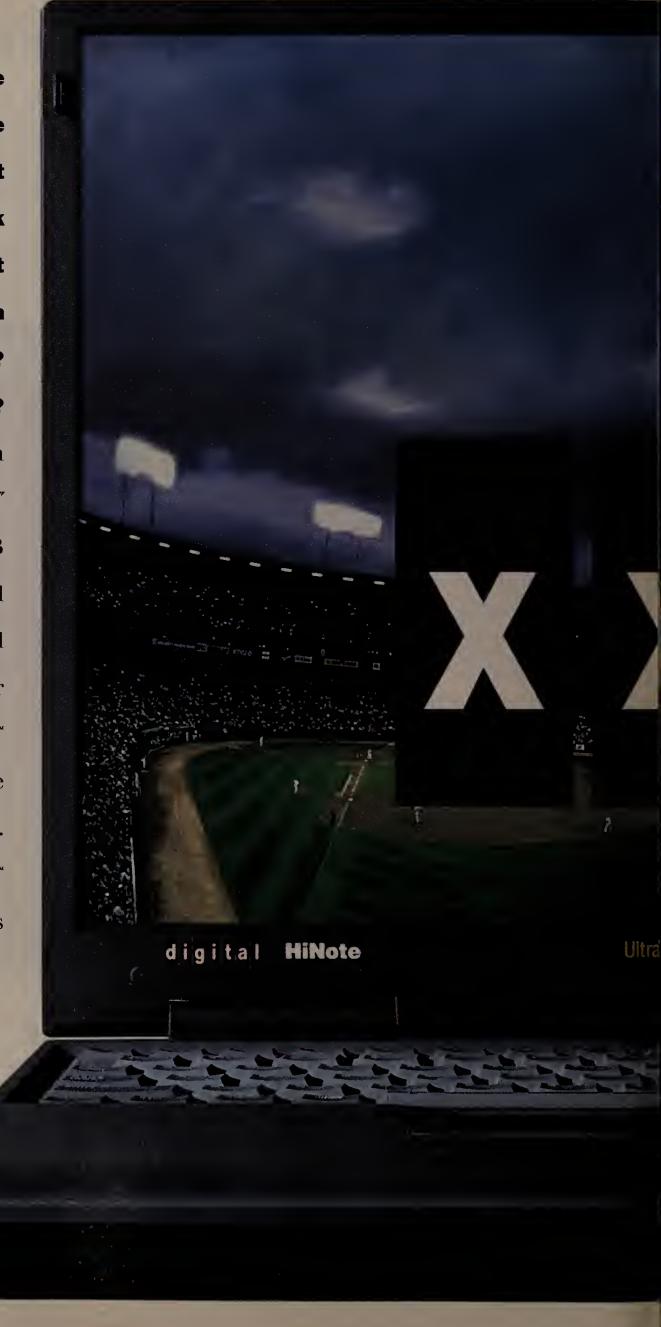
"We're getting close to this being a real product and a real standard with support," said Nathan Nuttall, an analyst at Sherwood Research in Wellesley, Mass. But he said corporate adoption of USB will take two to three years.

"If you've got a system [in place], you're not going to run out and throw away all your monitors and printers," he said. "For now, you're looking at a lot of serial connections." ☐

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Compatibility solved; Office 97 sales rise

By Gordon Mah Ung

LENA ROZELL has no problem saying her company is an all-Microsoft shop.

When Microsoft Corp. upgraded Office 4.3 to Office 95, United Video Satellite Group, Inc. switched over most of its 800 desktops, Rozell said.

"We deployed Office 95 almost as soon as it hit the street," said Rozell, director of information technology services at the Tulsa, Okla., company.

When the time came to switch from Office 95 to Office 97 early this year, Rozell was set to do it again. But she hit a snag that Microsoft is only too aware of by now: the much-publicized incompatibility between its Word 97 and all previous versions of the application.

Microsoft officials say those days are gone. With the release two months ago of its Enterprise Update Service 1.0, Microsoft's sales have been brisk enough to break previous records. The company claims to have sold an average of 60,000 licenses per day, or 20 million total, since Office 97 was released last December.

Although Microsoft said the figures can't be compared directly, Office 95 — which set a record itself — sold about 5 million copies in a 10-month period when it was introduced in August 1995.

But one software analyst said he would remain skeptical of the numbers until the company provides more details.

"They're trying to generate a lot more interest in the marketplace," said Chris Le Tocq, an analyst at Dataquest in San Jose, Calif. Le Tocq said the market for

> **"A lot of the documents that are produced wind up on our intranet and extranet," so moving to Office 97 has turned out to be a good business decision.**
> **– Fred Winograd**
> **Nationsbanc Montgomery**

suites has matured, and upgrade purchases have generally slowed. By releasing numbers that show droves of companies adopting the suite, Microsoft may just be trying to persuade others to follow suit, he said.

Microsoft officials wouldn't provide a breakdown of the figures but admitted that only about half of the 20 million licenses sold had been deployed to date. That figure excludes Office 97 licenses purchased by companies that still run Office 95, officials said.

BUG FIXES

Despite the criticism, Le Tocq said Office 97 has been popular — especially with the maintenance release that fixes numerous reported bugs, including the Word incompatibility problem.

The update was enough for Rozell, who has moved two-thirds of her company to Office 97.

The main reasons users cited for the upgrade are the Internet capabilities and collaboration features of the suite, Microsoft officials said. Office 97 applications let users save in native Hypertext Markup Language (HTML) and view changes made by individuals to a shared document.

Internet features such as the ability to save documents in HTML were among the reasons Nationsbanc Montgomery Securities, Inc. switched from Office 95 to Office 97 for its 2,500 desktops, said Fred Winograd, chief technologist at the San Francisco company.

"A lot of the documents that are produced wind up on our intranet and extranet," Winograd said. He wouldn't give details about the cost of upgrading but said it has turned out to be a good business decision. □

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NOW LET'S TALK ABOUT A PROGRAM THAT'S TOUGH TO GET INTO.

BROWSERS
Microsoft Explorer gains new security

By Laura DiDio

MICROSOFT CORP. last week released the latest version of its Internet Explorer browser for its Windows platforms.

Microsoft took steps to shore up potential security vulnerabilities in Internet Explorer 4.01.

The Redmond, Wash.-based company was sharply criticized following the Oct. 1 release of Explorer 4.0, which had several security glitches.

> Internet Explorer 4.01 includes enhancements designed to make it easier for users with disabilities to surf the Internet.

Explorer 4.01 includes the latest security updates and patches to the Version 4.0, so users only have to make one download for the most up-to-date feature set.

The most notable patch corrects a flaw in the so-called buffer overrun facility, which causes Explorer 4.0 to crash. This affects only Windows 95 PCs running Explorer 4.0.

Specifically, Windows 95 systems were at risk when a malicious World Wide Web site contained a uniform resource locator that began with "res://" and had more characters than the browser supports.

The extra characters potentially could form a malicious executable that could then run on an unsuspecting user's computer.

EASIER ACCESS
Explorer 4.01 also includes "accessibility" enhancements designed to make it easier for users with disabilities to surf the Internet.

Users can control the display of colors, font sizes and font styles of all Web pages. Explorer 4.01 also incorporates keyboard improvements for users who have difficulty using a mouse and support for screen readers to assist vision-impaired users.

For instance, all objects in Web pages on the Active Desktop can now be accessed using keystrokes instead of a mouse. □

StorageTek system a lifesaver for clinic

By Tim Ouellette

LIKE MANY hospitals around the country, the Cleveland Clinic Foundation's medical imaging projects were in critical condition.

In radiology alone, "we were burning several thousands of dollars of optical disk per month," with access times up to a half-hour long, said Dr. Robert Cecil, director of network computing at the Cleveland-based health system.

But the foundation is consolidating isolated, expensive and unscalable imaging projects into one central archive based on Storage Technology Corp.'s high-end tape storage.

Louisville, Colo.-based StorageTek last week made the system widely available when it announced the Medical Image Archive, a bundle of tape, disk and software tuned to the high-capacity, high-volume needs of the health industry.

The announcement comes at a crucial time, as the health care industry deals with managed care, cost cutting and mergers that require more doctors in widespread locations to share data.

Medical imaging originally was seen as a way to slash the time and costs of film-based X-rays. For example, each X-ray film costs about $5, but the hospital spends at least another $5 for the labor and space needed to file, store and access the film.

Imaging projects have been hampered by a lack of a strong storage component that can handle the performance and scalability requirements of huge medical image files. These aren't typical 1M-byte-size business data archives — medical image files can average 1G to 100G bytes in size, and doctors often need them quickly.

Robotic tape technology is thought to be better suited for these duties than a large number of optical disk platters or expensive RAID.

"StorageTek, with its support in its tape systems for huge files, really can bring something to the effort to support centralized medical imaging systems," said Philip Drew, an analyst at Concord Consulting Group, Inc. in Concord, Mass.

The Cleveland Clinic's archive now holds between 5T and 10T bytes of medical images and will soon add those from the cardiology department, Cecil said. The clinic also plans to create a link between the image archive and the hospital's other business-oriented information systems to tie all the elements of a patient's file together online.

Prices for StorageTek's Medical Image Archive begin at less than $100,000 and include the following:
- StorageTek open systems RAID.
- StorageTek Nearline tape libraries.
- Application Storage Manager software, which lets users view all archived files.
- Network security software from StorageTek's Network Systems division. □

STORAGETEK'S MEDICAL IMAGE ARCHIVE

Storage time frame	Tool	Use
0 to 1 month	StorageTek RAID disk array	Immediate patient diagnosis
1 to 3 months	StorageTek random access tape	Ad hoc access to recent historical images
0 to 7-plus years	StorageTek Nearline robotic tape library	High-capacity storage of all historical images

CA links Unicenter TNG to raft of specialty tools

By Patrick Dryden

COMPUTER ASSOCIATES International, Inc. has taken steps to strengthen its Unicenter TNG enterprise management suite by linking it to specialized tools from several vendors.

The moves reflect CA's strategy of embracing, not replacing, users' existing tools, yet making them work together with a single source of support.

That integration offers information systems managers the best of both worlds — streamlined enterprise management coupled with best-of-breed solutions, according to Peter Kastner, an analyst at Aberdeen Group, Inc. in Boston.

CA needs this type of broad support to compete with Tivoli Systems, Inc. and its many partners in the systems management market, which could hit $18 billion by 2001.

CA's actions include the following:
- It beefed up its network man-
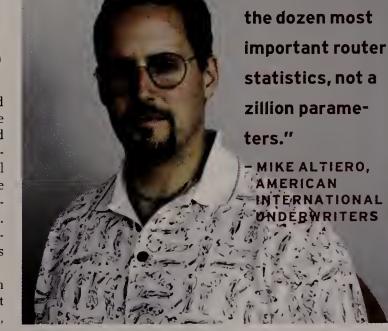
ENTERPRISE MANAGEMENT

agement capability and added support for devices and software from Cisco Systems, Inc. and Hewlett-Packard Co. Now, central operators can gather vital performance data from those routers, switches and hubs directly through Unicenter TNG. They can also launch device-specific tools from the suite's network map.

"Now we can see the dozen most important router statistics, not a zillion parameters," said Unicenter TNG user Mike Altiero, network services manager at American International Underwriters in Livingston, N.J.

Altiero said central operators need this "lite router manager" so they can compare router errors and congestion with system performance and other factors to diagnose complex problems such as slow application response time.
- Within weeks, users of internetworking gear from Bay Networks, Inc. and 3Com Corp. will get similar support, according

to officials at CA in Islandia, N.Y.
- On the systems management front, CA and Silicon Graphics, Inc. (SGI) announced plans to support Unicenter TNG and CA's database software on SGI's cache-coherent Non-Uniform Memory Access servers.

SGI also will bundle the framework subset of Unicenter TNG to manage servers and workstations.
- CA and HP have integrated support for HP's Vectra desktop PCs, Kayak workstation PCs, NetServer server PCs and Laser-

> "Now we can see the dozen most important router statistics, not a zillion parameters."
>
> – MIKE ALTIERO, AMERICAN INTERNATIONAL UNDERWRITERS

Jet printers in Unicenter TNG.

That means Unicenter TNG can wake up 1,500 HP systems at night to automatically distribute software in conjunction with HP's TopTools, said Mark Horak, technology manager at Fulbright & Jaworski LLP in Houston.

Integrating the international law firm's management tools that way "helps us put an upper limit on our personnel costs," Horak said. "Technical staff is getting harder to find and more expensive when you do find them." □

Computer Industry

Briefs

Hard drive slump

Seagate Technology, Inc., a leading PC hard drive maker, last week warned that sales for its second quarter of fiscal 1998—which will end Jan. 2—won't meet Wall Street expectations.

Seagate officials said the revenue shortfall was the result of unexpected pricing pressure and lower-than-anticipated demand for its high-performance drives.

IChat buys GlobalChat

Austin, Texas-based IChat, Inc. has acquired the Global-Chat product line from Quarterdeck Corp. in Marina del Rey, Calif., for an undisclosed amount. The buyout will give IChat about 33% of the market for software that lets users send text messages in real time over the Internet.

Cuts deepen at AT&T

AT&T Corp. in Basking Ridge, N.J., reportedly plans deep cost-cutting measures under new CEO C. Michael Armstrong.

The $52 billion telecommunications giant announced $2.6 billion in spending reductions in March, but Armstrong intends to cut even more, a spokeswoman said. AT&T also may take another run at acquiring a regional Bell operating company.

AST to slash 1,200 jobs

AST Research, Inc. plans to eliminate as much as 37% of its worldwide workforce, or about 1,200 jobs, company officials said last week. The cuts — the company's second round of layoffs in less than a year — are aimed at reducing the time it takes to get products to market.

Open Text buy

Waterloo, Ontario-based Open Text Corp. has acquired Campbell Services from FTP Software, Inc., in North Andover, Mass., for $6.7 million. Campbell makes electronic calendaring software that Open Text plans to integrate with its Livelink Intranet document management and collaboration software.

Security consolidations consumer-friendly

▶ *Small stand-alone vendors are targets*

By Laura DiDio

THERE WAS A flurry of consolidation activity in the security industry last week as vendors tried to bolster their product lines.

Axent Technologies, Inc. in Rockville, Md. — best known for its intrusion detection, remote access and security management products — acquired firewall vendor Raptor Systems, Inc. in Waltham, Mass., for $243.2 million in stock.

Next, leading antivirus vendor Network Associates, Inc. in Santa Clara, Calif., formerly McAfee Associates, Inc., closed its $1.3 billion acquisition of Network General Corp. early.

With that deal done, the merged entity promptly bought encryption vendor Pretty Good Privacy Corp. in San Mateo, Calif., for $36 million.

Finally, Internet Security Systems, Inc. in Atlanta, a maker of intrusion detection devices and security management tools,

SECURITY TECHNOLOGY

inked a deal with security consulting firm Price Waterhouse LLP to provide high-level security services for Fortune 1,000 companies.

Mary McCaffrey, an analyst at New York brokerage Alex. Brown & Sons, Inc., noted that security is a high-growth market that is "currently a very fragmented market."

"The [security] market is greatly in need of consolidation. There are way too many pieces for a lot of these small companies to get sufficient revenues and a customer base as standalone firms," McCaffrey said.
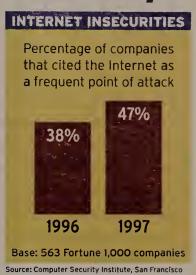
Other analysts said the consolidation could result in lower prices.

Phillip Carden, managing consultant at The Registry, Inc. in Hoboken, N.J., said the Axent/Raptor merger spells one-stop shopping for consumers.

"Before the acquisition, Axent had one of the broadest set of security offerings in the industry. The one thing that was notably missing was a firewall device, and they addressed that problem by buying Raptor Systems," Carden said.

Carden also said the burst of merger activity underscores the crucial role security will play in 21st-century networks that rely on the Internet.

"This is just the tip of the iceberg. The security industry is at the same stage right now that the internetworking industry was in in the early 1990s. Security is the key enabling infrastructure technology for the next wave of Internet-enabled applications, such as electronic commerce," Carden said. □

INTERNET INSECURITIES

Percentage of companies that cited the Internet as a frequent point of attack

38% 1996
47% 1997

Base: 563 Fortune 1,000 companies
Source: Computer Security Institute, San Francisco

SmartStream flows along

▶ *Geac upgrade has enterprise resource focus*

By Randy Weston

THE FORMER Dun & Bradsteet Software Co. is alive and kicking, one year after being bought by Canadian holding company Geac Computer Corp.

The Atlanta-based software maker is preparing to roll out the latest version of its client/server software system, Geac SmartStream Version 5.

"They bounced back after the buyout, and it's provided stability for the company," said Harry Tse, an analyst at The Yankee Group in Boston.

"The product is still very good. It was a smart move on their part to drop the manufacturing part of the product and concentrate on financials and distribution," he said.

Geac last spring dropped a year-old manufacturing module from its lineup. Its package now consists of financials, procurement, human resources and decision-support modules — a sort of enterprise resource planning system for non-manufacturers.

Geac is targeting a select group of vertical industries with its applications, namely financial services, health care, business services, public sector and manufacturers, although not the process side of the manufacturing business.

New inventory and project management applications are the highlight of Geac's latest client/server package, which is expected to be released the week of Dec. 22.

KN Energy, Inc. next year plans to upgrade to the new version of SmartStream, including the two new modules. Lorraine Wilson, technical specialist at the Lakewood, Colo., natural gas company, said a module that allows consignment of inventory will save the company $600,000 at one location alone. □

Alliance rallies behind E-commerce

By Sharon Machlis

SEVERAL MAJOR financial and technology companies have launched an initiative to promote electronic commerce.

The alliance, called First Global Commerce, will focus on enterprise payments, Internet commerce and smart cards. It will include a forum for discussing those technologies, as well as an initial offering of electronic-commerce products based on VeriFone, Inc.'s Integrated Payment System.

Other backers include VeriFone parent Hewlett-Packard Co., Electronic Data Systems Corp., Visa International, Inc., Citibank and Wells Fargo & Co.

"They have some heavy hitters," said Cliff Condon, an analyst at Forrester Research, Inc. in Cambridge, Mass. The initiative holds promise to help educate financial institutions and

First Global Commerce members

Company	Expertise
Hewlett-Packard	Systems integration and servers
VeriFone	Transaction payment offerings
EDS	ReadySET Internet credit-card processing
Visa	Credit-card technology
Citibank, Wells Fargo	Online banking
Mondex	Smart cards

get them up to speed, Condon said, but the challenge will be "how they can become not just another group with meetings."

The move by VeriFone helps counter aggressive moves by IBM in the electronic-commerce arena, industry watchers said.

"We think it's an important forum," said David Brancoli, a spokesman for alliance member Visa. "We anticipate that it is go-

ing to do significant work."

The forum is expected to hold its first meeting late next month, according to Bob Murphy, a director at VeriFone. The group claims that its offerings will be based on an open architecture. Initiative founders are talking with other technology companies and hope to announce more members by March. □

O P I N I O N

Take a break Everybody in my office seemed to be doing it, so finally I capitulated.

I surfed over to *www.gameshows.com*, downloaded the plug-in and started to play "Strike a Match."

"You'll love this. It's addictive," one of my glassy-eyed, addicted colleagues promised. Indeed, this on-line interactive word-match game was a snap to learn (12,000 points on my first score!) and wonderfully distracting. I immediately understood why small groups of writers and editors have been clustering around various PCs, shouting out categories ("Try horses! No, no, Broadway plays!") like demented *Jeopardy* contestants.

And once I'd spent some stress-relieving time this way, I realized how monumentally silly it is for managers to waste time worrying about this phenomenon. Frankly, we all need an occasional mental break from information overload — whether we get it from some engaging Web game or a sociable stroll to the coffee machine.

Yet there is an obnoxious trend afoot to strip all games from office PCs, as one of our feature stories ["Not playing around"] detailed last week. Leading the publicity campaign is a boneheaded U.S. senator who's convinced that federal workers are wasting millions of taxpayer dollars playing Minesweeper. Adding fuel to his foolishness are a handful of news stories that all quote the same sources, a highly dubious study that claims billions are lost annually in "worker productivity" and a few self-serving software companies hawking their search-and-destroy game products.

Suddenly we've got a completely bogus issue masquerading as a "management concern." I could go on and on about the fatally flawed notion that information workers can be clocked like an assembly line, or about the futile expenditure of IS resources to chase down and eliminate PC games. But there's more pressing business awaiting me; I think I can score 15,000 points this time. . . .

Maryfran Johnson, executive editor
Internet: *maryfran_johnson@cw.com*

Well, we've finally managed to remove all of the games from employees' computers.

L E T T E R S

Developers need to consider the hearing-impaired, too

IN REFERENCE to the Oct. 27 article on voice-recognition software ["Can we talk?" CW], I guess this is why they call deafness the "invisible handicap." Developers of voice-recognition products, when considering what applications their product could have for people with disabilities, seem to limit their vision to those who have lost motor skills, are blind or are otherwise unable to easily use a computer keyboard.

I realize that the development of this product is being driven primarily by business applications that could free people from their keyboards, but there is also an immense market out there among the hearing-impaired. Hopefully, one of the advancements we will see in the next couple of years will be *speaker-independent* voice recognition. I dream of the day when I can walk into a meeting, open a laptop, activate the microphone and have the conversations of everyone present displayed on the screen for me.

Bill Coombs
Information systems
Wal-Mart Stores, Inc.
Bentonville, Ark.

Advice on HR is dead wrong

IN COMPUTERWORLD'S Oct. 6 issue, Bill Laberis' commentary ["Things they don't teach you in Management 101"] raised two questions. Does *Computerworld* really want its readership to go around human resources departments and stop training its people? And how did someone as clearly arrogant and self-centered as Bill Laberis last at a market leader like *Computerworld*?

I read Laberis' editorials for years, and although I occasionally disagreed with his wrongheaded thinking, at least I respected his background and experience in IT markets enough to accept that he had a valid opinion. But where does he come off giving advice contrary to that of every management thinker of the last 20 to 30 years?

Laberis says to "stop pushing training." Meanwhile, technology changes dramatically every six to eight months. We are in the process of moving to a client/server model and extending our network to all of our sites and creating standards across multiple networks inherited through multiple acquisitions. Training is vital to just keep ahead of the deluge.

Laberis' words suggest that he views management as control — his control. If we look beyond his remarkably destructive advice, we see only the monumental arrogance of Mr. Laberis.

Lockhart Floors
Nashua, N.H.

> **Training at my company is vital to just keeping ahead of the deluge.**

Save tax dollars: Hire a grad and pay off the student loan

WITH ALL OF the talk about recruitment and retention, as a young IS graduate student, I believe that I have the answer. For every month an employee works at your company, send a check for his or her student loan payment (for example, $500 per month). Companies would save 33 cents on the dollar in taxes (or so I'm told) and have the most loyal employee possible. Also, by making the payment every month, companies do not risk large payouts while employees run off to another company. It's an absolute win-win situation.

Lewis Curtis
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Review of Staples Web site flawed; Navigator supported

COMPUTERWORLD evaluated the *www.staples.com* Web site in its Nov. 3 issue ["Office vendor Web expertise is out of stock"]. Although it is true that we do not currently offer an online catalog, your note that Netscape Navigator is not supported is totally in error. I am disappointed that this article was published without clearly researching the truth or contacting us via the Web for clarity's sake.

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Is the year 2000 problem overhyped? Impossible!

William Ulrich

On Nov. 3, *The Los Angeles Times* published an article called "Debunking Year 2000's Computer Disaster." The article said the year 2000 problem is overhyped.

The industry does have those professionals who have gone over the edge in spreading fear about this problem. Those people should step aside and let those of us who are legitimately trying to solve the problem do our jobs. But the year 2000 problem is real, regardless of what those on either side of the issue say.

The article said the year 2000 market is "vendor-created." That's a tired myth. Many vendors have told me if they could artificially create demand for their products and services, they would have chosen a less risky area.

There are legal risks associated with year 2000 work because failed companies will be looking for scapegoats. That's why one large consulting firm that specializes in embedded systems backed out of the year 2000 field last

month. Outsourcing firms burdened with noncompliant systems face another risk. There is no legal precedent as to

> **These people should step aside and let those of us who are trying to solve the problem do our jobs.**

who will pay to make those systems compliant.

And year 2000 projects aren't a favorite of vendors because they have a short life, are hard to staff and have a deadline most companies won't meet.

SOURCE ISSUES
Another problem with the *Times* article is its sources. David Starr, CIO at *Reader's Digest*, is the poster child of the "not

a problem" movement. The article refers to "others in similar positions," an anonymous group that refused to go out on a limb with Starr.

The article also quotes sources at the FAA, Bank of America and the Department of Defense as being on target with their year 2000 projects. But the FAA spent billions trying to replace its aging systems and failed. Bank of America lost two project office leaders just trying to launch its year 2000 initiative. The Defense Department has more types of computers than we can imagine around the world, in the sky and under the seas. Does anyone want to bet on whether those organizations will have their systems fixed in time?

The article also quotes Tom Mock at the Consumer Electronics Manufacturers Association as saying VCRs have "no internal calendar" — and therefore no year 2000 problem. Perhaps Mock would like to explain how my Magnavox VCR Model CRN130AT01 knows 01/01/00 is a Saturday without having an embedded date function. Mock is one of the "electronics experts" quoted as saying that less than 5% of embedded chips have

date functions.

Tens of thousands of computer professionals are working on the year 2000 problem. More join the battle daily. Brokerage houses, banks and insurance companies are spending hundreds of millions of dollars to mitigate year 2000 risks. Novell, Hewlett-Packard and Microsoft have articulated previously unknown date glitches to customers. The U.S. House and Senate, Federal Reserve Board, Securities and Exchange Commission, Comptroller of the Currency and White House have weighed in on the issue.

Is it possible that those people are so wrong and that Starr, Mock and a handful of others are so right?

When the press publishes the *Times'* type of article (it was reprinted on the Internet), it plants doubt in the minds of executives, directors and more than 8 million small to midsize firms sitting on the fence regarding this problem.

Articles such as this make me think that maybe a little hype isn't such a bad thing. □

Ulrich is president of Tactical Strategy Group, Inc. and co-author of The Year 2000 Software Crisis: Challenge of The Century. *He can be reached at tsginc@cruzio.com.*

Sell to the enterprise, not just IS

Michael Schrage

So I give my spiel about the future politics of enterprise computing to Large Software Vendor sales force. The talk goes well. But the crowd is much more interested in the next speaker. That's OK. He represents a huge account that Large Software Vendor lost, and the audience wants to know why.

This guy is all "Aw, shucks . . . I'm just a good ol' boy from Texas," with attitude as smooth as molasses on a hot Houston day.

His company is an aerospace giant with a very good IS reputation. Clearly, he's come here to send a message to Large Software Vendor. The crowd isn't hostile, but it sure isn't happy.

THE PLAYERS
Good Ol' Boy starts his story about why his company switched vendors. He talks about the role his IS organization played in the move. Turns out that the IS department had made a key decision: IS alone wouldn't pick the winning vendor. It would only select qualified finalists

based on rigorous technical criteria. The qualifiers would then audition for the people who would actually use the system. Large Software Vendor was one of three finalists.

Unfortunately, Good Ol' Boy drawls, the users didn't much like the folks from Large Software Vendor. Seems the users got the impression that Large Software Vendor didn't really believe that the users would make the final call about buying the system. Good Ol' Boy says he got feedback from his folks that Large Software Vendor talked past the users and continued to pitch IS. In other words, Large Software Vendor totally blew it.

The tale sucks the energy right out of the auditorium. It has the solemn ring of truth that makes the crowd sag. Good Ol' Boy takes a few questions, but it's clear that nobody will lay a glove on him.

I'm fascinated. For one, his was a parable of pure politics, so — selfishly — my talk was made that much more relevant. For another, I admire the clever way Good Ol' Boy had leveraged his IS organization. He positioned his group both as technical screen and as enterprise facilitator. If things go smoothly with the newly acquired system, he's played the successful role of technical partner with the business side.

If the new system doesn't go quite so well, then responsibility — blame is such an ugly word,

> **Large Software Vendor talked past the users and totally blew it.**
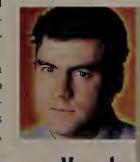
isn't it? — is shared with his collaborators. Smart management, smart politics. Good Ol' Boy didn't come all the way from Texas to the spurned lion's den to be eaten, y'know.

So Large Software Vendor has nowhere to look but the mirror to figure out what went wrong. Indeed, the larger message here might be that the enterprise IS sell of tomorrow truly has to be an enterprise sell instead of just an IS sell.

To be sure, the role of IS as technical filter for an organizational decision is hardly the mainstream of enterprise procurement practice. But then, I can't imagine that IS organizations don't learn from their acquisitions mistakes, either. My best bet is that this kind of acquisitions approach will grow along with the rise of enterprise computing. Believe me, Large Software Vendor now thinks so . . . and it's got far more at stake on it than I do. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! His Internet address is schrage@media.mit.edu.

SAP implementations bring gain as well as pain

In COMPUTERWORLD'S "From SAP to Nuts" front page story in the Nov. 10 issue, I was quoted saying, "If you estimated realistically, the numbers would be so staggering that you might never start." I meant that for life cycle costs on any enterprise resource planning implementation, but it came across unfairly as just applying to SAP projects.

For years, Gartner Group has been advising users to focus on *project* complexity, not just product complexity. Vendors like to beat up on each other about the speed of their implementations, but in reality, a complex project will take more than 24 months whether you are implementing Oracle, Baan or SAP.

The majority of effort in a complex project lies in steps such as infrastructure deployment, data architecture design, conversion, integration with legacy, testing and end user training. SAP's competition does not have any magical tools that make any of these phases any less complex. In my interview with your writer, I explained all these points, but she chose not to explore them.

Vinnie Mirchandani
Research director
Gartner Group, Inc.
Stamford, Conn.

Editor's note: In this SAP story, Computerworld *should have included response and commentary from SAP officials about the criticisms raised about R/3 installations in*

James Bruce, MIT's vice president of IS, says ill-defined business processes created an expected two-year delay in the school's SAP project

Some SAP projects yield sticky mess

the article. We neglected to follow our editorial fairness policy in this case, and we regret the oversight.

I WAS RESPONSIBLE for a very successful, 10-month "big bang" SAP implementation at Fujitsu Microelectronics, Inc. that has been live for 2.5 years. I always find these SAP stories to be quite humorous because the focus is always on the software, the time and the cost. That's absolutely the wrong way to look at it. The real focus should be on the business benefits of a successful project.

Companies should be asking if their

order cycle times or delivery performance improved, or if their processes have been streamlined so that productivity improved. Many companies go into these projects thinking that by implementing software, their business performance will magically improve.

With our SAP implementation, did we substantially modify processes? Yes. Was there pain? Of course. Changes to organizations and peoples' roles and responsibilities are going to be painful. Are we light-years ahead of where we would have been had we continued with our old systems and processes? Absolutely. There is a lot of misinformation out there, and people like to blame the software for poor project management. SAP is just software. What companies do with it is based on the people who are assigned to the project. When those people are not successful, they look for someone to blame.

Walter Curd
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technology applications
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AFTER READING the article on SAP implementation difficulties, I was surprised how many people don't realize that you change your business to fit canned software, and not the other way around. During my 16 years of business computer programming, I've lost count of how many times and how many ways I've seen companies shoot themselves in the foot with yet another "silver bullet."

Jerry Collins
Indianapolis

Free agents to become the rule

In YOUR "Top Guns" article on project management [CW, Oct. 20], I think you missed a large section of the project manager population. These managers are the very people covered by Peter Keen's column in the same issue: the independent free agent who goes from company to company and project to project.

As our industry moves in the direction described by Keen, the independent manager will become the rule: hired for the duration of the project, working with the business line at all levels, managing the technical resources, ensuring a successful implementation and then riding off into the sunset to the next project.

If Keen is correct, the internal manager will become more the exception to this rule.

Those of us who fall into the free agent category are probably an increasing percentage of IS. We'd be interested in more information on what our peers are doing and how they do it. This quibble aside, thanks for an interesting article and thought-provoking column.

Bryan R. Shelby
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The correct E-mail address is ...

THANKS FOR including my letter in your Nov. 3 issue ["Indianapolis offers a lot"], but my E-mail address was misprinted. I would like it very much if people in Indianapolis could contact me, so here is the correct one.

Jessica Shevitz
Indianapolis
jshevitz@galaxysi.com

Readers question Microsoft's actions, wonder if customers are well-served

ABOUT YOUR "No black hats" column [CW, Oct. 27]: First, there is a moral aspect to business practices. Wrapping Microsoft in the cloak of shareholder welfare begs the question of the spread of that welfare. What percentage of Microsoft shareholders are Microsoft employees or affiliates? Further, knowingly hurting the consumer to the benefit of the shareholder is immoral, like failing to call back a product with a defect that may result in injury.

Second, little stands against Microsoft co-opting Java as a tool for perpetuating its monopoly position. Putting Java in the public domain would eliminate, in my view, any possibility of the successful evolution of the language as a platform-independent tool. The success of TCP/IP is the result of its evolution as a platform-independent tool. Would you like to return to the era of vendor-specific network protocols? I would not.

Third, I find Microsoft's argument in favor of integrating Java tightly with its operating systems totally self-serving and completely uncompelling. If tight integration is what the consumer wants, there are plenty of options already avail-

able from Microsoft: C, C++, Visual Basic, etc. The whole point of Java is platform independence.

The good guys and the bad guys are competing for the hearts and minds of others. Black and white hats can be clearly seen. Of course, this is nothing new in human history.
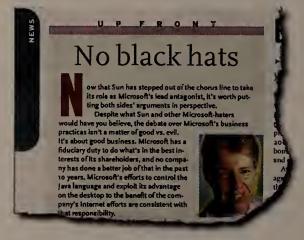
Jay Gallivan
Technology manager
PaineWebber, Inc.
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I READ EDITOR PAUL GILLIN'S "No black hats" column and have a few questions and comments.

Should Microsoft then also place Windows in the public domain? Shouldn't it open the doors and let all of us developers create what we believe Windows should be?

Windows 95/98/NT/3.1/3.11 all have had massive problems, but most people who are not willing to change continue to run these environments because it is the thing they are told to do.

I support approximately 2,000 Win-

No black hats

Now that Sun has stepped out of the chorus line to take its role as Microsoft's lead antagonist, it's worth putting both sides' arguments in perspective.
 Despite what Sun and other Microsoft-haters would have you believe, the debate over Microsoft's business practices isn't a matter of good vs. evil. It's about good business. Microsoft has a fiduciary duty to do what's in the best interests of its shareholders, and no company has done a better job of that in the past 10 years. Microsoft's efforts to control the Java language and exploit its advantage on the desktop to the benefit of the company's Internet efforts are consistent with that responsibility.

dows-based users and about 5,000 Unix users, and I have to say that the people using Unix require a lot less of my time than the other group.

Perhaps if publications like *Computerworld* would promote Unix and X with the gusto they do for Microsoft operating systems, we could move forward and have users working with an operating system that was designed for multiprocessing/multiuser environments.

Mark F. Burgo
mfburgo@surfshop.net

EDITOR PAUL GILLIN'S comment in his column that Microsoft has a fiduciary duty to do what's in the best interests of its shareholders shows one of the major flaws in corporate America today. Where does the customer fit into the formula?

Every day I have to deal with employees with Windows 95 and Windows for Workgroups machines that crash. To me, this is an operating system problem that should be fixed. I shouldn't have to buy another one so that the shareholders can make more money.

I worked in the midrange computer area for over 20 years, on IBM System 32, 34, 36 and AS/400 machines, and in all that time I had two operating system crashes. If those systems had crashed two or three times a day, IBM would be out of business. It is interesting that corporate America continues to put up with Windows crashes.

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COMPUTERWORLD

December 8, 1997

EVERYONE IN THE KNOWLEDGE POOL

YOU CAN LEAD WORLDWIDE
DIVISIONS TO A COLLABORATION
SYSTEM, BUT YOU CAN'T
ALWAYS MAKE THEM SWIM

Base
man

Source

WHAT'S THE DIFFERENCE BETWEEN A LITTLE KID WITH A WEB SITE AND A MAJOR CORPORATION WITH ONE? NOTHING. THAT'S THE PROBLEM.

Building a publishing-only Web site is the first step to becoming an e-business. A step that most businesses (and a lot of little kids) have already taken. That's fine as far as it goes – it's a very cost-efficient way to distribute basic information.

But the real payoff (for businesses, at least) comes with steps two and three. Step two is moving to "self-service" Web sites – where customers can do things like check the status of an account or trace a package online.

Step three is moving to transaction-based Web sites – not just buying and selling, but all processes that require a dynamic and interactive flow of information.

IBM has already helped thousands of companies use the Web to make the leap from being a business with a Web site to being an e-business – putting their core processes online to improve service, cut costs or to actually sell things.

For example, we helped Charles Schwab Web-enable their brokerage systems for online trading and customer service. Since opening, Schwab's Web service has generated over one million online accounts totaling over $68 billion in assets.

e-business economics are compelling. According to a recent Booz-Allen & Hamilton study, a traditional bank transaction costs $1.07; the same transaction over the Web costs about 1¢. A traditional airline ticket costs $8 to process; an e-ticket costs just $1. Customers love the convenience; management loves the lower costs.

IBM solutions have already helped thousands of businesses become e-businesses. To find out how IBM can help you do the same, bookmark www.ibm.com/e-business or call us today at 1 800 IBM 7080, extension NC32.

IBM

Solutions for a small planet™

What Do You Know?

It's become a familiar saying: "If we only knew what we knew, we'd be a stronger company." Those words ring especially true for multinational companies that have wasted untold sums by duplicating efforts or repeating the same mistakes in the various, disconnected parts of their company.

Call it knowledge management or collaboration systems — the goal is the same: Global companies are trying to get knowledge out of staffers' heads into a general pool of intelligence.

European companies, in fact, are reportedly on the verge of a knowledge management explosion, according to Information Strategy magazine, published by Economist Newspaper Ltd. In the study, 87% of respondents said more formal systems would help their companies manage and share knowledge.

But global companies face obstacles their domestic counterparts never would. For instance, Hughes Electronics Corp. restricts collaboration to avoid exporting encrypted material that violates federal export laws. In addition, cultural differences must be considered. When the U.S. builds an E-mail system, for instance, it may not consider that in Japan, attention to hierarchy can prevent a free flow of communications.

On the technology side, some global companies are trying to standardize on a worldwide set of collaborative and knowledge management technologies, be it Microsoft's NetMeeting software or Lotus Notes. And certainly intranets will play a major role. But despite the fancy technologies such as videoconferencing being offered, it seems most of the world still dabbles in pretty simple fare: E-mail, bulletin boards and the phone. Learning what you know still boils down to knowing how to learn . . . and learning that even the most sophisticated technology cannot always solve basic communications problems.

Mary Brandel

MARY BRANDEL
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World

Electronics Giant Studies Global Web Transactions

BUT CHALLENGES LOOM, INCLUDING PRICING, NEW ORDER VOLUMES, GROWTH

BY TOM DUFFY

The prospect of shifting a global firm into the realm of electronic commerce presents some daunting technical challenges. But as AMP, Inc., the $5.4 billion maker of electrical connectors, has found out, the technical challenges sometimes pale in comparison with the business challenges electronic commerce presents.

AMP, which does business in 50 countries worldwide, was one of the first industrial manufacturers in the world to launch an electronic catalog of its products in January 1996. Plans called to link the catalog to its corporate databases at a later date in order to enable online ordering (visit our Web site at www.computerworld.com/emmerce for an online feature on AMP).

By year's end, AMP plans to have enabled online ordering for its customers in the U.S. To do this, it is combining its original catalog, built with Saqquara Systems, Inc.'s StepSearch technology, with IBM's Net.Commerce software suite.

But company officials are still working out some of the business issues and are not yet ready to set a target date for when their international customers will come online, according to Jim Kessler, AMP's director of global electronic commerce.

"There's clearly nothing technical standing in the way at the moment," Kessler said. "It's just working through some of these issues that taken one at time are not major challenges but amassed together add a set of challenges that need to be considered very carefully."

One of the biggest of these is reconciling pricing for AMP's products among different countries. For instance, in some markets, shipping and logistical costs might be folded into the overall cost of a product. In others, these costs might be addons. The problem is, when more uniform pricing is introduced on the Web, customers might be confused by price changes on products they have been buying for years.

"If a person thinks he was paying 'X' dollars for something and now sees it on the 'net for 75% [of] that, he's going to think he can get it cheaper on the 'net," Kessler said. "We're having to spend more time than

view

we anticipated at the marketing and sales levels communicating these new changes to the customer so they understand the new deviation."

AMP is also anticipating that electronic commerce will bring a horde of new customers interested in purchasing smaller quantities of products. For that reason, he said, AMP is studying whether to add distribution facilities that might focus on smaller packages as well as what kind of packaging might be needed for the smaller orders.

"I think the combination of product information and ease of ordering will avail us of many more customers," Kessler said. "To be able to support standard pack size orders vs. small pack orders down to and including individual pieces requires a vastly different logistics system."

To be sure, there are some technical issues as well. Because

of the U.S. government's ban on exporting 128-bit encryption, Kessler said, AMP would not be comfortable conducting all of its transactions electronically. While 64-bit encryption would be satisfactory for routine transactions, it would not be for transactions that involve proprietary information, such as customer equipment designs, he said.

Right now, the firm is hoping the encryption issue will be resolved before AMP is ready to introduce its international customers to electronic commerce. If not, the company might take a dual approach, making routine transactions electronically but keeping more sensitive ones off the Internet.

Bruce Guptill, research director for electronic commerce at Gartner Group, Inc. in Stamford, Conn., said one of the biggest technical hurdles

for the information technology staff can be linking the Web-based front-end systems with a firm's legacy financial and accounting systems.

"Posting CAD/CAM information on the site is not nearly as complex as linking these front ends with transaction servers and linking to financial accounting," Guptill said.

But Kessler said the task was relatively straightforward for AMP.

"With the ability to use Java coding to interact with CICS applications, you end up with a relatively clean interface," he said. "Once you can do that, the systems are pretty much in place to support you from a financial point of view."
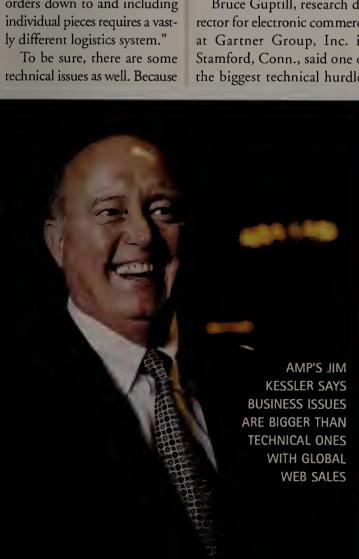
Nor does Kessler expect that supporting the systems on a 24-by-7 basis will present too much of a challenge. "For a large corporation like ours, 24-by-7 support has been a way of life for 20 to 30 years," he said. "This is just another element of that."
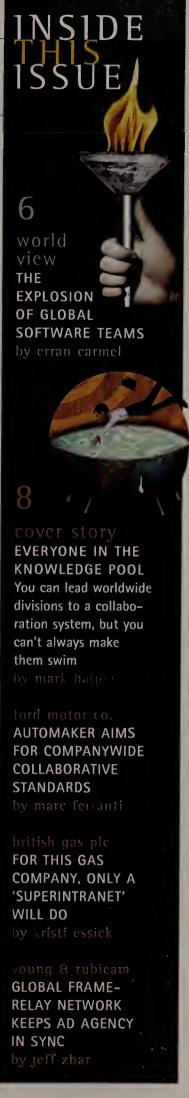
Indeed, even AMP's original catalog was quite global in its scope. From the beginning, it supported five Indo-European languages, and it soon added Asian language support.

Of course, that's not to say AMP is comfortable it has cleared all the hurdles — business and technical — on the way to the brave new world of international electronic commerce.

"Are there some issues in China or some third world country that we haven't unearthed yet?" Kessler posed. "I'm sure there are."

AMP'S JIM KESSLER SAYS BUSINESS ISSUES ARE BIGGER THAN TECHNICAL ONES WITH GLOBAL WEB SALES

DUFFY IS A FREELANCE WRITER IN SOMERVILLE, MASS.

The Explosion of Global Software Teams

ADVANTAGES SEEM TO OUTWEIGH THE OBSTACLES TO CROSS-BORDER DEVELOPMENT

BY ERRAN CARMEL

The early 1990s will be seen as a turning point for global software development. Not only is the software industry spreading quickly to developing nations, but there is also a dramatic rise in software collaboration across international borders. When two or more such groups work together on the same software product, they become a "global software team."

Almost all the top software companies have at least one collaborative project effort, and many have multiple efforts in multiple countries. For example, Manugistics, a $56 million company based in Rockville, Md., develops its flagship product simultaneously in India, Germany and the U.S.

Until recently, software companies preferred the co-located form of software development in which all developers are centralized at one site. But companies have concluded that other factors outweigh the disadvantages of distance.

For many years, geographically centralized Microsoft was a holdout in dispersing software development — especially globally. But even Microsoft now has three R&D centers outside the U.S.: in Britain, India and Israel.

Five factors explain the explosion of global software teams. The first three are idealized (though they are very real in many cases), while the last two are pragmatic:

1. BEST IN THE WORLD. Software companies want to employ the "best talent," regardless of location. Few companies can uproot individuals from their home country to work on a given project, be they low-cost programmers from developing countries or world-class programmers from Britain or Belgium.

2. LOCATION TRANSPARENCY. This is the ability to work with another colleague or group as if you were in the same room. Global software teams make use of various collaborative technologies, such as shared repositories and bulletin boards. But developers often prefer electronic mail, even when more expensive, richer channels are available. For instance, videoconferencing is still technically fickle and uncomfortable for many.

Software professionals like E-mail's ability to be precise and culturally neutral, and they instinctively like its asynchronicity. Two other collaborative software engineering environments are critical to global software teams: multisite version control and multisite bug tracking databases.

3. FOLLOW THE SUN. Given time zone differences, the ideal dispersed project can work literally around the clock. This collapses time to market for project completion — sometimes drastically. Early this year, IBM publicized a global project using five teams: in Seattle, Latvia, Belarus, India and China. The company's goal is to rapidly produce software products using Java.

4. GLOBALIZED PRESENCE AND GLOBAL MERGERS/ ACQUISITIONS. Software companies, predominantly U.S.-based, are flush with new wealth from the spectacular market appreciation of their stock. Since 1990, these companies have been on a global hunt to expand their product offerings, eliminate competition and fill in their product offerings.

Software executives are aware they need to position their company as a "global player." One of the ways to send this signal is to move key activities, such as development, outside the home country.

5. COST REDUCTION AND PROGRAMMER SCARCITY. Companies in high-wage nations seek low-cost programming. The giant of off-shore, low-cost programming is India, where loaded costs per developer are about 25% of those in the U.S. But the U.S./Indian relative cost data can be deceptive, for it ignores scale. For an India-based team, the overhead costs of IT infrastructure and travel are substantial. Smaller development teams in India may not be cost-justified.

CARMEL IS AN ASSOCIATE PROFESSOR AT AMERICAN UNIVERSITY IN WASHINGTON. HIS UPCOMING BOOK IS TITLED *GLOBAL SOFTWARE TEAMS*, PUBLISHED BY PRENTICE HALL.

ILLUSTRATION BY LARRY GOODE

WIRED WORLD

There's a new IT spender in town

ACCORDING TO THE LATEST NUMBERS from International Data Corp. in Framingham, Mass., Asia-Pacific will overtake Europe in terms of IT spending by the end of the century. While Japan is relatively slow-growing at only 7% compound annual growth rate (CAGR), the growth in China's emerging market is stellar (33% CAGR). Still, the U.S. maintains its share of the worldwide IT market, despite the strong growth in the emerging markets. U.S. growth is being driven by software and services rather than the PC industry, which is the engine for growth still in many of the emerging markets.

WORLDWIDE INDUSTRY GROWTH: 10.9% (CAGR)
U.S DOLLARS

U.S.
1995	$224B
2000	$385B

Western Europe
1995	$155B
2000	$220B

Asia-Pacific
1995	$135B
2000	$246B

Rest of world
1995	$43B
2000	$84B

Source: IDC Worldwide Black Book

INTERNET IN IRELAND

THIRTY-NINE PERCENT of Irish Internet users have used the Internet for shopping, spending money and ordering goods remotely from their computers, according to a survey by the Irish Internet Association. The study surveyed more than 2,300 businesspeople and consumers.

WHERE IN THE WORLD DO YOU RANK?

[...] DATA CORP in Framingham, Mass., and World Times, Inc. have completed their second Information Society Index. The study ranks the 55 developed and developing countries that account for more than 99% of all IT expenditures annually. Scores are based on 20 variables within the countries' information, computer and social infrastructures. Here are some preliminary excerpts. (A full report will be published in the March 1998 edition of Global Innovators.)

[...] SCORES were 7.5% higher this year than in 1996. [...] to lead the list, with a score of 4,987 — almost 1,400 points higher than Finland, the second-place finisher.

ALTHOUGH LAST year Sweden was the second-place finisher, this year its score dropped, as did Germany's, New Zealand's and Mexico's. Other than Sweden, the Scandinavian countries had strong scores.

JAPAN SHOWED the highest percentage growth, with a 35% higher score in computer infrastructure and a 19% gain in overall score. In the 1996 study, Japan ranked 12th.

For more information on this study, contact Lisa Bloom at (508) 935-4236.

WEB POCKETS OF PROFIT

YOU WOULD THINK THE strongest Web adoption would occur in more developed countries. But according to a recent IDC study, this is not always true. IDC examined Web market opportunities by region and country, using 10 leading indicators of Internet connectivity, adoption and commitment. Findings are based on 15,000 interviews in 15 countries.

HERE ARE SOME FINDINGS:

Korea and India score well in strategy, home page deployment, Java deployment and extensions of the network to customers and suppliers.

In Europe, the Netherlands led in home pages, self-hosting and Java deployment.

France holds a strong interest in intranets but has weak interest elsewhere.

Germany and Italy were low in most areas except ISP hosting. Italy was strong in extending the network to customers and suppliers.

For more information on this study, contact Elizabeth Freedman at (508) 935-4764.

EVERYONE IN THE KNOWLEDGE POOL

When Ernst & Young LLP in New York installed a Lotus Development Corp. Notes system to allow collaboration among its worldwide consultants, it soon discovered a flaw that had little to do with user interfaces, database access, bandwidth or any other aspect of technology.

The problem: Many consultants in the 70,000-person global consultancy were resisting the program because they had no incentive to use it. On the contrary, sharing knowledge and information via Notes might have harmed an employee's own chance of advancement within the firm by putting valuable information in the hands of a coworker who might then grab the spotlight for a job well done.

The company's solution? It fostered a culture of sharing by adding collaboration to employee performance evaluations. "We had to convince [...]

[...] company consultants [...] someone misuse it," said John Peetz, knowledge officer at Ernst & Young.

According to Peetz, it is now standard practice in the U.S. to measure how often a junior consultant contributes to one of many "best practices" databases or to note

how well senior consultants lead a collaborative spirit. Auditors are required to contribute at least five pieces of knowledge a year to qualify for a bonus. Outside the U.S., these measurements are just now starting to catch on.

Ernst & Young's experience is typical of the many global organizations trying to implement technologies and processes for collaboration. The first challenge is to get people to share in the first place. Certainly, there is a tremendous soup of collaborative technologies simmering at most global companies: databases, intranets, high-speed global networks and simulation. And certainly these technologies bear limitations. For instance, many global collaborators have grown frustrated with the difficulties in finding just the right document in their extensive Notes databases.

But even if you stir these technologies into a well-seasoned broth, what good is it if users are allergic?

"Unless there is an incentive to share knowledge, whatever knowledge base you have will be pretty weak," said Marcello Hoffmann, a senior research analyst at SRI Consulting, a Menlo Park, Calif., think tank. "The bottlenecks in a company are usually more psychological and organizational than technological."

The mad dash to digitize collab-

You can lead worldwide divisions to a collaboration system, but you can't always make them swim

BY MARK HALPER

is understandable in a world in which companies are increasingly drawing on markets, workforces and suppliers around the globe. When workers are separated from water coolers and drawing boards by time zones, the need to facilitate collaboration with software, silicon and fiber is clear.

With the right approach, worldwide companies can share knowledge that might otherwise remain parochial, and they can gain efficiencies — all without spending a career developing in-company contacts or letting questions and answers bounce around in a series of buck-passing phone messages. Workers need instant access to digitized expertise. Call it push-button knowledge.

CULTURAL ISSUES

Which makes it all the more important for companies such as DHL Worldwide Express to overcome cultural and other human differences that could impede collaboration. DHL, the leading international document and package delivery company, operates in 226 countries, including Israel and much of the Arabic Middle East. "Some of the countries don't recognize Israel — don't even want them on the map," noted Alan Boehme, director for customer access and logistics marketing at the company's U.S. subsidiary, DHL Airways, Inc. in Redwood City, Calif. Cobbling together an international intranet for the exchange of information among its autonomous country groups raised the question of whether to include Israel, which DHL did.

Cultural differences can turn seemingly [...] logy-building chores into dif- [...] F[...] nce,

there's choosing icons for your Web pages. The "A OK" sign in one culture is tantamount to an obscene gesture in others. And color schemes could prove offensive if not tailored to a country because in various cultures, blue, white, red and yellow are regarded as colors of death and mourning.

Sometimes, the issue is not so much active resistance to sharing as it is passive. At most global companies, the knowledge an employee holds has traditionally resided in the employee's head. While that is a secure location, it is hardly one that others in the organization can readily tap.

Car maker Chrysler Corp. is giving that notion plenty of thought as it implements a collaborative system for automobile engineers in the U.S. and Canada that will eventually support engineers at Chrysler plants in Mexico and Spain. The system, called the Engineering Book of Knowledge (EBOK), provides "best practice" information on car design and building processes, ranging from door panels to tail lamps to engine parts.

For many Chrysler engineers, this information has long resided, if not in their heads, in countless loose-leaf binders. The idea of EBOK is to get subject matter experts to enter best-practice descriptions in a central database on a Notes system, according to Susan Miller, supervisor of product and process systems at Chrysler's Auburn Hills, Mich., technical computer center.

"Not everyone is doing this with a smile on their face," Miller said. "It's a painful, grueling task. I don't want to say they're trained, but we've got them to agree to document what they know. The second step is

to share the knowledge, the third is to leverage it and the fourth is to improve it."

Like consulting firm Ernst & Young, Chrysler is making collaboration part of its employee performance appraisal process, taking into account contributions to EBOK.

OLD-FASHIONED SHARING
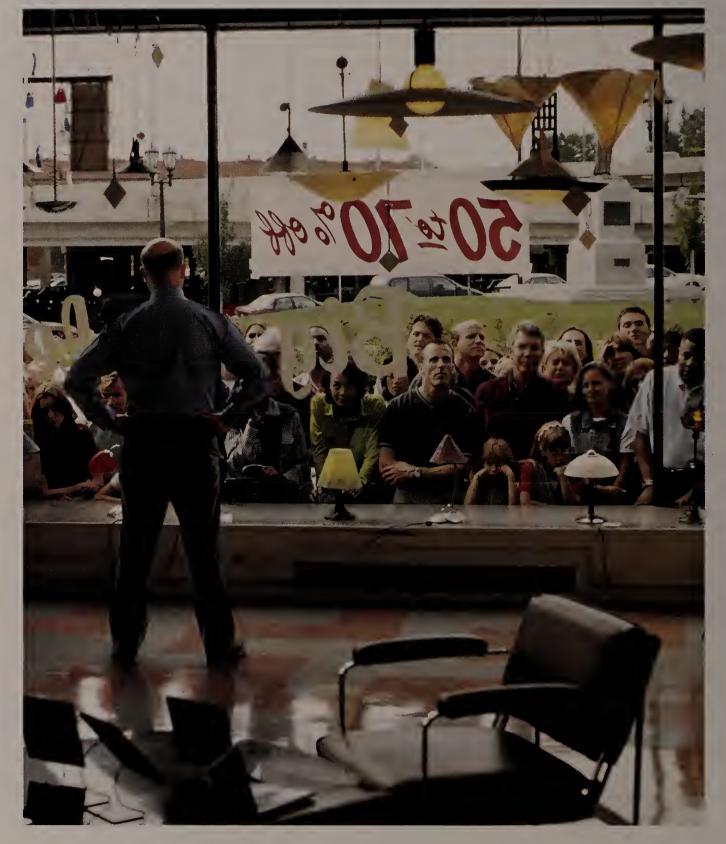
Some global companies have hesitated to take this step but have still managed to cultivate a collaborative culture. Buckman Laboratories International, a Memphis chemical and solvents maker, has won awards for its internal knowledge sharing system, which it calls K'Netix. Despite the fancy word, K'Netix draws on what these days could arguably be considered pedestrian technology: CompuServe bulletin boards set up on the company's intranet.

The fundamental idea is for employees — Buckman calls them "associates" — to regularly read and contribute to any of its seven CompuServe forums. This way, employees in Europe, North and South America, Africa and the Pacific Rim can share knowledge that other employees might not have known they possessed. Chuck Carncross, Buckman's vice president of coatings and plastics, recalled an instance in which a Buckman researcher posted a question about water treatment. His answer came back from an unpredictable source: another Buckman employee who had little to do with the first one's field but whose hobby was beer making.

"He said, 'Here's how we treat that problem in beer making,' " Carncro[...] o[...]ed. "There's no way that [...]

e-business

e-business

HOW TO HANDLE FIFTY MILLION
UNEXPECTED GUESTS.

The only thing faster than word-of-mouth advertising is word–of–e-mail advertising. A positive reputation in cyberspace can bring you millions of new customers; a bad rap spreads ill will at the speed of light.

When you start sending millions of customers at a time to your Web site to do more than browse, you have to be concerned about the quality of their experience. Too much demand, and the performance of your Web site can slow to an annoying crawl (this is bad). Way too much demand, and users won't be able to connect at all (this is terrible). e-business, after all, is about interactivity – buying, selling, customer service, etc. – and if customers can't get through, they can't interact.

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Scalability is just one e-business problem we can help you solve. We've helped thousands of businesses move their core processes to the Web to lower costs, improve customer service and actually sell things. To keep up with the latest IBM solutions, bookmark www.ibm.com/e-business. Or call us at 1 800 IBM 7080, ext. NC33.

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pened without the forums."

However, an effective forum requires dutiful employee participation. Carncross and others at Buckman claim to have engendered a cooperative spirit without basing remuneration on sharing. Carncross said appraising cooperative spirit might encourage a mercenary attitude.

"When you pay children to do things around the house, when you ask them to take out the garbage, they say, 'Where's my money?' " Carncross said.

Getting employees into a collaborative mode is just one human challenge in the quest for global collaboration. There's another human factor in the equation, and an ironic one. It seems companies are increas-

Buckman, for instance, assigns individuals as "forum specialists," Carncross noted. These workers are not industry experts. Rather, they make sure questions get answered and don't die on the vine or rot on the bulletin board. Another type of specialist, called a section leader, writes abstracts into a central database accessible via the CompuServe forum. This spares others the drudgery of reading through the records of an entire conversation.

Monsanto's Junnarkar said he recognizes human knowledge-herding as a top priority in enhancing collaboration among the global agricultural, pharmaceutical and food giant's 19,000 worldwide employees. Currently, he is identifying new roles people can play to move knowledge through the com-

"It took me 20 years to build up a personal network here so I could answer any question I might have by making no more than three phone calls," she said. "I knew who to call, and if that person didn't know the answer, they would know who would. But my personal network is a little deficient for today's times."

International borders can pose another obstacle to collaborative efforts in the form of technology export laws. Defense companies such as Hughes Electronics Corp. restrict collaboration because they run the risk of exporting encrypted material that might violate federal technology export laws, noted Larry White, manager of information technology security.

STATE OF TECHNOLOGY

So once international organizations have the incentives in place, what is the state of technology today? Basically, it's a groupware program accessed through an intranet front end in the form of a browser. Users and analysts are calling for programs that make collaborative databases easier to search. As a user, Ernst & Young is experimenting with Verity, Inc.'s Intelliserve search engine as a way to improve on an earlier Verity search tool that comes standard with Notes.

Better yet, users are hoping for technology that actively delivers collaborative data as they need it and packages content in the context they need, which could vary from the context required by their co-worker.

Borrowing an in-vogue term, Gartner's Bair said collaborative technology needs to be "more push and less pull." Various companies are developing programs with that aim in mind. Chrysler's Miller is evaluating products from a number of companies, including Grapevine of Australia and Mayflower, to enhance notification for the EBOK users, who now number 500 and could eventually reach 5,000 or 6,000.

Montreal-based consulting firm DMR Corp., which global Japanese giant Fujitsu Ltd. owns, claims to have developed an intelligent database that delivers information on time and in context and says its early global customers include The Boeing Co.'s commercial airplane division.

This reflects the precepts of many other percolating collaborative technologies. Al-

CERTAINLY there is a tremendous soup of collaborative technologies now simmering at most global companies. But even if you stir them into a broth, what good is it if users are allergic?

ingly relying on humans to monitor the state of databases and forums and to make sure data doesn't get lost. The reason? Information indeed seems to be getting lost or scattered about in incohesive form across the myriad databases in place within a company or even within one database. Many Notes users, for instance, say finding files within the database can be difficult.

Jim Bair, an analyst at Gartner Group, Inc. who is both a Notes observer and a Notes user, said the Notes database works well as a repository of information but is not an effective communicator because finding files in it can be "tedious and cumbersome." Bipin Junnarkar, director of knowledge management at Monsanto Corp. in St. Louis, described searching his Notes database as "not a user-friendly process."

So remarkably, despite all the technology intended to deliver information to the fingertips, global companies are assigning human beings as knowledge shepherds. A new form of worker, who might be called the human metafile, is emerging.

pany's extensive intranet and Notes system and is basing his work on the book *The Knowledge Creating Company* by Nonaka and Takuechi.

"Often we have the content, but it comes down to context. If you can't capture the context, it becomes abstract," he said. For example, he noted, an employee may fetch information on items sold but not know what events, such as weather, might have affected sales.

Price Waterhouse, a global consultancy based in New York, has coined the term "knowledge concierge" for the individuals it assigns to maintain about 25 Notes databases. These workers are constantly purging, adding and reordering information such that any consultant in the firm can tap another's knowledge by accessing the Notes database.

This is a modern-day supplement to what Fran Engoron, Price's senior partner in charge of intellectual capital, calls the personal network of human contacts within the organization.

buquerque, N.M.-based Muse Technologies Corp., a spin-out from Sandia National Laboratories, claims its Continuum collaboration system radicalizes the human/computer interface and permits a hands-free, three-dimensional sharing of thoughts and designs in a sort of virtual reality/computer-aided design/voice synthesis combination. Early customers include NASA's Jet Propulsion Laboratories, which is using Continuum to design spacecraft. Muse also claims to have industrial customers including Chevron Corp. and Schlumberger Ltd. Chief Executive Officer Creve Maples said several major automobile manufacturers are interested in the technology.

While there are plenty of fancy notions about how to advance the state of the collaborative art, the problem is, many companies don't have the wherewithal or patience to serve as trial labs for technologies that will require mind-set changes. Ken McLenan, DMR vice president, candidly conceded that for all its revolutionary potential, "we have trouble explaining this to people."

For reasons like that, it's no wonder some of the more successful global collaborators are not always practicing bleeding-edge technology. Just as DHL uses camels, not vans, to deliver packages in some countries, it is limited in information collaboration by technology infrastructures.

"In some parts of Africa, the best way to communicate is with telex," Boehme said. "You use whatever you have to in any area."

SRI's Hoffmann concurred. "There's a huge chasm between the technology you hear about and what's being used, which is E-mails, faxes and telephones," he said.

While familiarity weighs heavily in people's preferences, resistance will stem from some unpredictable factors. Hoffmann noted that virtual reality programs may prove unusable as a collaborative tool because about a third of its users experience motion sickness.

"I personally did, and I didn't find that particularly fun," Hoffmann reported.

All the more reason why global innovators, as usual, may want to keep on hand a stock of stomach medicine.

HALPER IS A SAN FRANCISCO-BASED JOURNALIST.

COLLABORATION KINKS

BY REBECCA SYKES

Enthusiastically used, groupware can be a potent business tool. But deploying groupware on a global basis without regard to cultural differences can doom it.

"Trying to force people to collaborate is like pushing on a string," said David Coleman, managing director of Collaborative Strategies, a San Francisco-based consultancy. "It really gets you nowhere."

For example, people in some cultures are selective about how much client data they are willing to put into a shared database, said Margaret Matthews, a knowledge director at Andersen Consulting in Chicago.

The consulting giant has 55,000 employees worldwide and multiple Notes databases to which it expects employees of all ranks to contribute where appropriate. Matthews found that Andersen's Japanese users were more likely to call a client "a worldwide electronics distributor" than to name the company because of a strong bias toward protecting client confidentiality, she said.

But since leveraging employees' intangible knowledge is the biggest asset for a consultancy such as Andersen, the firm created a program last year called Knowledge Management 2000, whose charge is to address just these types of participation issues, according to Matthews.

Efforts such as this are key to forging the differences that exist among cultures. For example, U.S. managers might launch groupware expecting workers in different departments and locations to electronically kick around ideas informally, but that may violate protocol in countries that adhere to a more hierarchical business structure, according to Coleman.

"If I was in Japan and wanted to talk to a co-worker, I might have to let [my] manager know, who'd check with [the co-worker's] manager," Coleman said. "When [the U.S.] builds groupware, we don't assume you have to go through this convoluted way to send [E-mail] to someone."

Assumptions about users' technology can also undermine a push to groupware. Not everyone is networked, let alone using late-model PCs, Coleman said. "British Telecom field offices still have 286s and 386s, so they may not even run what [another country] is building," he said.
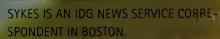
Moreover, even abstract concepts such as a country's legal climate can affect users' participation level with groupware. Matthews has found some U.S. users reluctant to enter information for fear of a lawsuit, even though Andersen's databases are private.

"People are starting to wonder what we can be accountable for from this global network," she said.

For example, if an analyst documents lessons he has learned from client site work — from implementing a particular software package or re-engineering a specific department — it's possible "we could actually be legally liable" for not doing it better, Matthews said.

All told, the key to successfully implementing global groupware is to resist being star-struck by the latest technology and instead let the users, with their various cultural quirks, control the process, according to Coleman.

"Most people pick the tool and say, 'OK, what can we do with it?'" Coleman said. A better way is to define the problem, get the stakeholders on board and "find tools that meet your challenge," he said.

SYKES IS AN IDG NEWS SERVICE CORRESPONDENT IN BOSTON.

FORD MOTOR CO.
Automaker Aims For Companywide Collaborative Standards

WHILE DISSEMINATING COLLABORATION SYSTEMS COMPANYWIDE, FORD STUDIES CULTURAL ISSUES, HARDWARE STANDARDS, BANDWIDTH. BY MARC FERRANTI

For global automaker Ford Motor Co., the success or failure of collaborative computing is tallied in the billions of dollars.

Collaborative technology is part of a companywide effort to build "world cars," designed and manufactured by teams spread across five continents, leveraging economies of scale that only a company as large as Ford could achieve. That effort — the company's massive Ford 2000 reorganization launched in 1995 — is supposed to cut product development time from 36 to 24 months and save $3 billion to $4 billion, starting with the 1999 models.

Ford took the plunge into what it calls "virtual engineering," or "virtual collocation," shortly after the Ford 2000 launch. It started with eight product design sites that took part in an initiative that's still under way, called Global Studio, intended to help design engineers work together while reducing travel, speeding product review cycles and reducing costs.

The design sites encompassed Valencia, Calif.; Dearborn, Mich.; Cologne, Germany; Dunton, England; Coventry, England; Turin, Italy; Hiroshima, Japan; and Melbourne, Australia.

So far, the program looks successful. By using the tools selected for the Glob-al Studio program, the industrial designers found they reduced the need for travel, improved the quality of their work, made more timely decisions and avoided personnel relocations.

Ford started with the design function because of its homogeneous workstation environment, said Dick Carver, senior technical specialist at Ford's Product De-velopment Systems at the Dearborn headquarters. While other Ford units use a mix of workstations and servers from Hewlett-Packard Co., Sun Microsystems, Inc. and IBM, the design teams at the eight sites standardized on Unix-based Silicon Graphics, Inc. workstations even before Ford 2000, Carver noted.

These sites have been using SGI's In-Person videoconferencing, whiteboard video and audio software, as well as SGI's Z-Mail and Annotator electronic-mail programs, to send video clips and three-dimensional images over the company's intranet.

Using this technology, design engineers can import renderings from modeling packages and video snaps from clay models, while design managers in Dearborn coordinate various off-site design projects, Carver said.

For instance, a Dearborn-based vice president of design can help ensure some degree of cross-fertilization among teams working on related projects — especial-ly important when designers at different sites are building variations of designs based on the same platform chassis and using the same circuitry.

From this design-centric use of collaborative technology, Ford is branching out. But it won't be easy.

"We're trying to build upon that ef-

> "AT THE END of the day, Ford is essentially people. We have to make sure we're providing the right tools and that we understand what makes . . . virtual meetings work."
> DICK CARVER, FORD ▶

fort with the design community and extrapolate that into engineering, which is a much bigger animal because of the diversity of the different types of workstations," Carver said.

With the goal of standardizing on a set of collaborative technologies companywide, Ford has undertaken about 20 different virtual engineering pilot projects, involving about 300 people during the past few years. These pilots use different types of point solutions, including Look-In, a 3-D shared whiteboard mark-up tool from C-TAD based in Ann Arbor, Mich., and teleconferencing software from PictureTel Corp. in Andover, Mass.

STICKING TO STANDARDS

Though no one package has been rolled out companywide yet, where possible the company uses software that adheres to International Telecommunications Union standards. These include T.120 for data conferencing and H.323, a specification developed to guarantee that systems made by different vendors will work together over packet networks.

The Vehicle Quality Review (VQR) manufacturing unit participates in one of these pilots. Currently, VQR teams at plant sites in Dearborn, St. Louis, Louisville, Ky., and Valencia, Venezuela, use PictureTel for videoconferences. While the geographically dispersed teams gather in conference rooms to see and hear one another using the PictureTel system, participants use laptops and projectors to simultaneously look at, for example, the same portable document format designs stored on a Web server. These paperless meetings serve to help coordinate operational tasks among the lead plant and its sister plants, Carver said.

From these experiments, Ford plans to disseminate collaborative computing technology throughout the organization. One plan calls for installing Microsoft Corp.'s NetMeeting software (which now incorporates the H.323 protocol) throughout the company — not just for engineers but for anyone who has a PC. Initially, it will be used primarily for data conferencing, with audio for travelers to follow.

However, though there are some 165,000 PCs in use at Ford, not all of them are running Windows 95, Carver noted. Most likely, Ford will start installing the software at the end of this year or early next year, during the next round of PC upgrades.

Bandwidth is another concern. Ford is trying to get vendors interested in developing software that will operate more efficiently. Rotating a three-dimensional rendering and sending it across an IP network to several different sites is a great way for engineers at various sites to work together, but it eats up a lot of bandwidth, Carver pointed out. While some sites might have the necessary bandwidth, or soon will, it's difficult to ensure that all sites around the globe will.

PEOPLE MATTER MORE

But one thing that Carver stressed has more to do with people and cultural issues than with technology.

"At the end of the day, Ford Motor Co. is essentially people," Carver said. "We have to make sure we're providing the right tools and that we understand what makes these virtual meetings work and what gets in the way of them."

For example, companies rolling out collaborative technology would do well to think about whether, or under what circumstances, virtual meetings could do without video. Depending on the scope and goals of a virtual meeting, the latency inherent in videoconferencing today may be a hindrance.

Meeting protocol should also be examined. "We all have these books on our shelves about making meetings work. Do the same issues apply in these virtual meetings?" Carver asked. "You can't ignore the human side of business."

FERRANTI IS AN IDG NEWS SERVICE CORRESPONDENT IN NEW YORK

For This Gas Company, BRITISH GAS PLC
Only a 'Superintranet' Will Do

BUSINESS UNITS WILL

MAINTAIN THEIR OWN

INTRANETS BUT ALSO

TAP A CENTRAL DATABASE.

BY KRISTI ESSICK

To BG PLC, managing and sharing information is more than a good idea — it's crucial. After all, the formerly state-owned British Gas has 36,000 worldwide employees, is responsible for delivering gas to 18 million customers and undertakes research in far corners of the world on topics such as pipeline engineering.

BG, which the UK government priva-

said. "This body of knowledge is our biggest asset."

For instance, BG will make the last three years' worth of Research/Technology reports available on KITE. Staying abreast of the latest findings will help engineers and researchers ponder new worldwide projects.

But there was one problem: Each of BG's seven business units already had an intranet. Each was developed separately, is managed by a local Webmaster and differs in infrastructure and design. The servers are running a mix of technology from Microsoft Corp., Netscape Communications Corp. and Lotus Development Corp. Each one uses a local search engine the intranet developer chose and built.

The solution is a careful balance between

To be competitive in the future, BG needs to share and manage this knowledge base across the organization and with partners worldwide. In one case, it is developing an open discussion forum concerning the regulation of the gas industry. It expects employees around the world to share their knowledge of regulatory statutes and trends in their particular country.

For remote areas, where connectivity is sparse or low quality, BG will regularly send CD-ROMs with updated versions of KITE.

BG plans to extend its intranet into an extranet to share data with external partners around the globe, Wybrew said. The extranet would run over leased lines and use both encryption and authentication, he said.

But first, there are a few hurdles to clear

"WE ASPIRE to be a company not constrained by physical boundaries."
JOHN WYBREW, BRITISH GAS ▶

tized in 1986, has a history of operating diverse and geographically disparate business units under one banner, said John Wybrew, executive director of corporate affairs.

But to survive in the increasingly liberalized worldwide gas market, BG began to realize it had to start sharing knowledge among all of these units, according to Tom O'Connor, head of communications and operations, corporate affairs. Consequently, BG is developing a corporatewide superintranet — dubbed "Knowledge and Information To Everyone," or KITE — that will enable employees to share information and also act as a central repository of knowledge, O'Connor said. So far, 7,000 employees have passwords to the site. In the next year or two, everyone will.

"We have a great deal of knowledge and experience in the gas chain," Wybrew

separation and centralization. KITE will actually be a "supersite," with information stored on several databases, including Oracle Corp.'s Oracle, Microsoft's SQL Server and Notes, managed by information staffers in each business unit. Webmasters will continue to choose and deploy the technology that works best for their business group, O'Connor said. BG plans to make all of the sites searchable from KITE.

One scenario is to also have a central Webmaster to manage content, passwords and maintenance for all of KITE. This Webmaster would most likely manage the KITE-specific servers and databases in conjunction with BG's integrator, British Telecommunications PLC. In fact, KITE was designed and built by BT's Intranet Complete service, and BT hosts the site.

— for instance, right now, business units function as individual operations and don't collaborate with one another, Wybrew said.

But if it's up to Wybrew, that won't remain the case for long: "We aspire to be a company not constrained by physical boundaries," he said.

ESSICK IS AN IDG NEWS SERVICE CORRESPONDENT IN LONDON.

Global Frame-Relay Network Keeps Ad Agency in Sync

FROM TAIWAN TO ECUADOR, YOUNG & RUBICAM'S GOAL IS TO GET ALL MARKETS ONTO THE SAME PAGE.

BY JEFF ZBAR

When Bill Colantuono returned to Miami from three harried days in Mexico City this past September, among the messages awaiting him was word that client United International Pictures Ltd. (UIP) in London had changed the Latin American release dates for one of its movies.

That could have resulted in chaos for the group account director at New York-based Young & Rubicam Advertising. Colantuono would have to log on to the agency's network, rewrite the media plan for a half-dozen regional markets and disseminate the revisions throughout Latin America — all while getting approval from client offices in London and Rio de Janeiro.

But it's for time-sensitive situations such as these that the agency implemented its frame-relay global network three years ago. Colantuono accessed UIP's records from the agency's Lotus Notes database in London, made the changes and disseminated the new plan for Brazil, Argentina, Chile, Colombia, Ecuador, Mexico and Panama.

The agency's backbone network connects more than 300 offices worldwide. Where frame relay is not available, the agency uses alternatives such as X.28 or X.25, said James Scielzo, senior vice pres-

ident and chief technology officer.

The agency's network was first installed in the U.S., followed by parts of western Europe and Latin America, said David Gutierrez, Young & Rubicam's vice president and regional technology officer for the Southern Hemisphere. The goal is to get all markets to the same level within the next six months, bringing on offices in Taiwan, China, India, Korea, Japan and the Philippines, Scielzo added.

"The entire world will have the same standard," Gutierrez said. That standard includes using Notes to transfer information across continents, transfer print advertisements and TV commercial files as attachments and generally "share and keep informed about who is doing what

around the world," he said.

The UIP Notes database is hosted centrally in Young & Rubicam's London offices. The system automatically replicates the data to UIP's computers, or the client can dial directly into the Young & Rubicam network. The application is also available on the other side of the firewall so it's accessible via the Internet. Security clearance is divided into seven levels.

As piracy and competition force international movie release dates closer in time to U.S. release dates, the technology also enables executives to almost simultaneously execute marketing programs that affect UIP's global image. When UIP released *Jurassic Park: The Lost World*, Colantuono and other executives shared information to tweak media plans and promotional activities. "It's best for idea

sharing, for promotions that worked in other countries," he said.

Executives also track competitive releases by title, distributor, release date, country, region and studio. When information is received on competitor spending, it's added to the database. When a rival bumps up a release, account reps can rework release plans of their own. "It's like a huge filing cabinet," Colantuono said.

It might be easy to lose track of information in that huge cabinet, Scielzo admitted. But the quality of data retrieval from within any database is only as good as its organizational programming, he said. With Notes, for example, users can search on text strings, keywords or items, Scielzo said.

There's another benefit to Young & Ru-

THE LINK is best for idea sharing, for promotions that worked in other countries."

BILL COLANTUONO, UNITED INTERNATIONAL PICTURES ▶

bicam's automated collaboration. Depending on the time of year, Rio may be two hours ahead of Miami; London may be six. "There's only a brief window every day when I can communicate with both," Colantuono said. "It's very useful just to get that flow of information going."

ZBAR IS A FREELANCE WRITER IN CORAL SPRINGS, FLA.

HOW TO KEEP A SECRET.
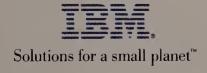
In transforming your business into an e-business, the single most important issue you have to wrestle with is the issue of security.

Without flexible control over who sees what information, all the benefits of putting your key business processes online (which is, after all, the definition of an e-business) are a moot point. And when you connect your critical systems to the Web to help you improve customer service or increase the efficiency of your organization – security is a white-knuckle issue for the people charged with keeping your systems running and your data protected.

It's not just a matter of whom you let in and whom you keep out (although that is obviously important). When you're using the Web (or an intranet) to do things like let your employees change the asset allocation of their 401(k) accounts or let your customers see what their credit balance is, you need the ability to determine who sees what and who can make changes to what they see.

IBM e-business solutions can help you manage access to the really important information you make available online. We've spent over three decades protecting the integrity of corporate information systems. We've pioneered things like Realtime Intrusion Detection, Anti Virus Labs, and Emergency Response Services. And we've made security an integral part of IBM e-business technology – so you can build Web sites that know how to keep a secret.

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Briefs

BASF hires Unisys

Chemical maker BASF Corp. in Mount Olive, N.J., signed Unisys Corp. to a three-year, $65 million desktop services contract to roll out Windows NT software to 12,000 desktop users at 80 BASF sites in the U.S., Canada and Puerto Rico. Unisys will be responsible for systems procurement, project management, installation and maintenance.

Stress injuries ruling
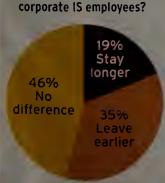
The New York State Court of Appeals extended the time to sue computer makers for repetitive stress injury. Under the ruling, injured users have three years from the time their symptoms first appear or from the last time they used the keyboard in question. Previously, users had to file suit within three years of first using the keyboard.

The euro problem

Confidence levels for meeting the January 1999 deadline for converting systems to recognize the euro vary widely. A survey of 792 information technology managers and 254 finance executives in Europe found half of the U.K. respondents and 90% of the German respondents believe they will meet the deadline. The survey, conducted by Neamon Bond Associates, was sponsored by Viasoft, Inc. Sixty percent don't know how much code will be affected by the addition of the euro.

WHITHER CERTIFICATION?

What difference does vendor certification make in retaining corporate IS employees?

19% Stay longer

46% No difference

35% Leave earlier

Base: 250 technical training managers

Source: Gartner Group, Inc., Stamford, Conn.

Warehouse helps lens maker focus

Didier Lambert: The data warehouse "helps us decide levels of inventory for different categories" of lenses

▶ *Serves as standard for multiple platforms*

By Julia King
PARIS

INFORMATION SYSTEMS director Didier Lambert is a pragmatist who cuts to the chase about the IS strategy of $1.5 billion Essilor, the world's largest lens and eyewear company.

"Realistically, we're going to run different systems on different platforms for years. We don't have the time to replace all of our systems with integrated software," Lambert said.

Yet Essilor also needs to aggregate and analyze data from plants and laboratories worldwide. It also is looking ahead to a growing market, as more of the world population ages and requires corrective lenses. That, Lambert said, is where the company's data warehouses come in.

In 1994, Essilor standardized worldwide on data warehouse software and tools from SAS Institute, Inc. in Cary, N.C. Since then, a warehouse implemented in France has played a key role in reducing the company's running inventory levels by around 10%, or about $375 million. Another warehouse in the U.S. promises to launch Essilor into an entirely new business: selling eyewear market data.

The Paris-based warehouse is the repository for order, production, manufacturing and inventory data from various proprietary and off-the-shelf software systems that run on PCs, IBM AS/400s and Unix-based computers throughout Europe.

DECISION SUPPORT

"With the SAS warehouse, we're able to take files from any platform or any database," Lambert said. "Users can then use a menu of wizards or write their own requests to analyze why a particular lens is selling in a particular place. It also helps us decide levels of inventory for different categories."

In the U.S., meanwhile, Essilor of North America in St. Petersburg, Fla., has implemented a separate warehouse to track

Lens maker, page 36

Users rev up marketing software
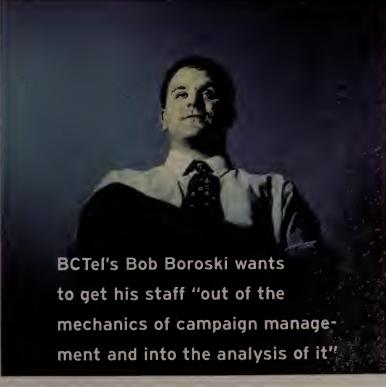
By Craig Stedman

THE NEED FOR speed is pushing competition-frenzied users to dig deep and invest in packaged software for managing marketing campaigns.

For many direct marketers, the homemade mass-marketing systems they threw together in the past aren't keeping up as product promotions get faster-paced and are targeted at smaller groups of customers. So companies are counting on a new breed of packaged products to help chop the time it takes to create their customer pitches.

"We're constantly running multiple offers and direct-mail programs for our customers, with increasing degrees of personalization," said Bob Boroski, manager of database marketing at BCTel, the Vancouver, British Columbia-based telephone subsidiary of British Columbia Telecommunications, Inc.

But the accelerated marketing, which has been pushed by industry deregulation that opened up BCTel to cellular and local phone competition, is overwhelming the homegrown PC-based setup that Boroski's staff uses now.

BCTel's Bob Boroski wants to get his staff "out of the mechanics of campaign management and into the analysis of it"

Too many working hours are eaten up just creating and maintaining files, Boroski said. "You spend all your time in execution and not enough in analyzing what worked and what didn't," he said. "We've reached the point where it makes financial sense to invest in packaged software that lets me get my people back."

BCTel this month plans to start using software called ValEx, from Boston-based Exchange Applications, Inc., initially in parallel with its custom system. In addition to faster campaign turnaround times, Boroski said he expects ValEx to help him do more sophisticated targeted marketing and event-based mailings.

Other users had kind words

Marketing software, page 36

DATA VAULTS
Backup saves day in storage meltdown

By Tim Ouellette

HERE'S THE latest folk wisdom for IT staff: It is never too late to back up your data.

Within a month of enlarging its central corporate backup archive in Philadelphia, the law office of Cozen O'Conner saw the move pay huge dividends.

That's because even the best laid storage plans can fall apart in an instant.

Recently, the central Banyan Systems, inc. server at Cozen's New York offices crashed, possibly because of excessive heat in the computer room, said Amy Freese, director of information services at the nationwide law firm. Then the Compaq Computer Corp. RAID storage that is supposed to protect data from such problems also failed.

Backup, page 36

Lens maker focuses on data

U.S. sales trends and identify best practices at the company's 42 U.S.-based labs.

Eventually, Essilor of North America also plans to use its warehouse to launch a business selling eyewear market data. "Right now, we have to buy that data from third parties," said Jeff Kubacki, vice president of IS at Essilor of North America. "But if I can get that information from our 42 labs, which represent over 25% of the market, I can start extrapolating what the total market looks like."

Kubacki said the next step is persuading other labs to supply Essilor with data so it can become an information broker to the industry.

Yet whether other industry players would be willing to provide data to Essilor or buy data from it remains an open question.

"It's true that the more data you have, the more information

> With 19,000 employees worldwide, Essilor operates 15 lens manufacturing plants and 75 finishing labs around the world.

you can extract from it, and there's a huge market for information," said Herb Edelstein, president of Two Crows Consulting, a data warehousing consultancy in Potomac, Md. "But I'm not sure it's realistic

that competitors would want to contribute data. That's the keys to the kingdom."

Kubacki estimated that Essilor of North America already is saving between $1,200 and $1,500 per user by having users access the warehouse via the company's intranet.

The warehouse is also serving as a data "bridge" as Essilor of North America migrates from an older AS/400-based financial system to Oracle Corp.'s packaged financial applications, which run on a Hewlett-Packard Co. HP 9000 computer.

"I have a need with finance to pull data out of new Oracle financials and the old AS/400 applications, and I can do that with SAS. So it's also providing me with a solution to writing old-fashioned programs," Kubacki said. □

U.K. retailer prepares for new currency

▶ *$163 million for NT-based systems will ease transition to euro*

By Ron Condon
LONDON

U.K. RETAILER Marks & Spencer PLC is investing 100 million pounds ($163 million) in new systems over the next two years to make sure its stores can handle multiple currencies, including Europe's upcoming common currency, the euro.

The plan involves replacing all the systems in the company's 300 stores in the U.K. and the rest of Europe with Windows NT-based systems.

TIME TO CHANGE

ICL PLC is the main contractor managing the project, which involves converting 20 stores each month. ICL, which is based in the U.K. and owned by Fujitsu Ltd. of Japan, also has collaborated for two years with Marks & Spencer on the development of the Globalstore software that will run the cash registers and communicate with back-office servers from Hewlett-Packard Co.

"Our current systems, which were supplied by ICL, have been running since 1984 and have come to the end of their useful life," said John Sacher, director of information technology and physical distribution at Marks & Spencer. "They are now hard to upgrade and do

not link easily with our other systems."

The new systems already have been tested in seven stores, where staff training time has been cut by half and 95% of customers are processed within two minutes, compared with a rate of 60% using the old terminals.

Sacher said the systems will be in place by March, in time to prepare for the introduction of the euro in January 1999. At that time, participating countries' currencies will be fixed to

a standard currency across the European Union. The new Marks & Spencer terminals will be multicurrency and multilanguage and will be capable of dealing with different tax rates, depending on where they operate.

"We want to offer customers the chance to pay in practically any major currency," Sacher said. "We see the euro as just another currency to handle." □

Condon writes for the IDG News Service in London.

Backup saves day in storage meltdown

"We have had only three disk failures in six years, and two happened on the same day, in the same place," Freese said.

Then the reality of the scarce information technology labor pool reared its head. With no local information systems staff in New York, the local tape backups were able to recover only 30% of the server's critical data.

That left 30 users pacing outside the systems room 15 hours after the crash waiting for access to the approximately 1G byte of client files.

But Freese had helped build a central backup archive in the firm's Philadelphia headquarters with ABARS software from CommVault Systems, Inc., a small Oceanport, N.J.-based vendor.

Using that storage "vault," Freese rebuilt the New York Banyan server over an X.25 wide-area network providing 56K bit/sec. throughput.

"We never planned to rebuild remote servers from the vault," she said. "It is not an efficient way to restore gigabytes of data."

But it worked. Less than 24 hours after the crash, users in New York had their crucial client data and electronic-mail files back online and were working again — all thanks to a central data vault 80 miles away.
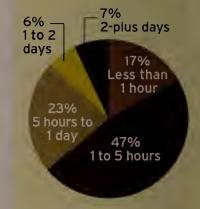
The upgrade a month before had added extra storage capacity specifically for the 10 remote offices, including New York, that tie in to the Philadelphia headquarters. Freese said she tries to

keep three to four months of data available in the vault for emergencies such as this.

Even with local backups and RAID systems, today "there are more possible points of failure and increasing vulnerability," said Donna Scott, an analyst at Gartner Group, Inc. in Stamford, Conn., in a recent report "At the same time, there is also a need to recover more swiftly because customer service and loyalty can be directly affected."

DOWNTIME DOWNER

Longest duration of unplanned downtime in the past year:

- 7% 2-plus days
- 6% 1 to 2 days
- 17% Less than 1 hour
- 23% 5 hours to 1 day
- 47% 1 to 5 hours

Base: 700 IS executives

Source: Find/SVP, New York

So like Cozen, businesses are starting to develop central backup schemes for all servers, not just their mainframe, finding that their work is driven by applications on a hodgepodge of platforms in spread-out locations.

"If this happened before we had the vault — I don't want to think about it," Freese said. □

Users rev up marketing software

for products such as ValEx. For example, officials at Federal Express Corp. in Memphis said the company has seen nearly a 300% increase in direct-mail response rates since installing Exchange's software last year as part of a move to do more targeted marketing [CW, Sept. 22].

Campaign management software "is one of the first full bloomings of [decision-support] applications" tied to data warehouses or marketing databases, said Wayne Eckerson, an analyst at Patricia Seybold Group in

> Campaign management software "is one of the first full bloomings of [decision-support] applications" tied to data warehouses or marketing databases.
> — Wayne Eckerson, Patricia Seybold Group

Boston. Work that often was farmed out to high-priced service bureaus can now be brought back in-house, he said.

But doing so isn't cheap. Paragren Technologies, Inc. in Reston, Va., last month introduced a campaign management

product that costs about $1 million for 10 to 20 users, with consulting thrown in. Exchange officials said ValEx installations also can easily top $1 million. And users may have to bring in a whole new set of workers to use the software [CW, Sept. 29].

However, the packaged tools hold out the promise of enabling direct marketers to change their product pitches almost daily, said Jeff Johnston, director of consumer marketing at American Security Group, Inc. in Atlanta.

Johnston is beta-testing Paragren's One-By-One software and has seen 10% to 50% improvements in response rates on promotions for the insurance policies his company sells on a contract basis.

"Speed is the single most important factor for us, except maybe for data cleanliness," he said. "If we find something valuable now, we can literally be in the market in days instead of weeks." □

The Internet

Electronic Commerce ♦ The World Wide Web ♦ Intranets

Briefs

Web connections

Banyan Systems, Inc. in Westboro, Mass., has announced Relay/Gold Web Server, client/server software for connecting mainframe and midrange applications to the Internet, and Relay/Gold 3270 Gateway for connecting host applications to Microsoft Corp.'s Windows NT, Unix and other platforms. Both of the products are integrated with Banyan's StreetTalk directory and are priced at $1,495 per server, plus $4,995 to $9,995 for 50 clients.

Web workflow

UWI.Com, a division of Unisoft Wares, Inc. in Victoria, British Columbia, and Alameda, Calif.-based Action Technologies, Inc. have integrated UWI's Internet forms technology with Action Technologies' ActionWorkflow Metro Web-based workflow software.

E-commerce services

France Telecom plans to offer a range of electronic-commerce services over the Internet and has licensed software from Open Market, Inc. in Cambridge, Mass., to develop those services, which will include secure payments. France Telecom, the world's fourth-largest telecommunications company, already offers Internet access and a search engine at *www.pageszoom. com*. Open Market officials said the firm has five of the top 10 telephone companies as E-commerce customers.

ONLINE SUBSCRIBERS

September 1996
19.2M

June 1997
23.9M

September 1997
25.3M

Base: 90 online business and consumer services

Source: Electronic Information Report, Stamford, Conn.

WEB SITE REVIEW ▸ *Catalogs online*

'net shopping not so merry

By Kim S. Nash

LIKE ZILLIONS of other proud Americans, I shopped the day after Thanksgiving. But rather than hip-checking and feinting to ensure I got what I wanted, I browsed, clicked and sipped hot cocoa.

I tackled companies that have a long history in catalog sales and now sell on the World Wide Web. Some had pleasant surprises, such as the Holiday Gift Finder at Recreation Equipment, Inc.'s (REI) site. Others presented obstacles, such as broken links and glitches at Lillian Vernon Corp.'s site.

Despite recent articles in the business and trade press that breathlessly proclaim this will be the season online shopping comes into its own, my socks weren't knocked off.

Overall, I found that the most successful catalog sites organize information simply and intuitively, use humor and simple features to draw shoppers in, provide services shoppers can't get over the telephone and contain links and features that actually work. Unfortunately, I didn't find any that included all of those elements.

L. L. BEAN, INC.

I'll start with what went right, namely L. L. Bean, Inc.

Bean's site design is dynamic, but without animation that can slow download time. The sense of activity comes from the graphics — crisp color photos that show people having out-

L. L. Bean's Web site is energetic and fun — and better looking than the paper catalog

door fun. The site is more interesting to look at than Bean's traditional paper catalog, in fact.

Product category labels are easy to understand — home and camp, clothing, L. L. Kids. One caught my attention: Gift Box Kit, which the company described as "a special way to present an L. L. Bean gift." It turned out to be a cardboard box, ribbon and L. L. Bean sticker for $1.95 — nothing remarkable. But the sense of mystery in the labeling kept me interested and clicking.

A couple of drawbacks: Online selection is limited to 1,000 products. So, even if you know Bean sells an item elsewhere, you may not be able to order it online. Online shoppers also can't get items monogrammed or altered, as phone shoppers can.

REI

REI's site is nice, but with product names, animated promotions and other come-ons all vying for your attention, it gets a bit crowded.

However, the breadth of information is impressive. You can compare snowshoes, learn how to use them and get suggestions about where to go snowshoeing, all at the same place. That's more information than you can pry out of a busy salesperson in one of REI's stores.

REI's Holiday Gift Finder is clever. It steps you through the selection of a product by narrowing categories and picking a price. I was thrilled to find 12 versions of water-resistant, breathable rain pants priced at less than $75. But a closer look revealed three duplicate entries.

Review, page 38

• Mainstream retailers test 3-D

Consumers plug in to interactive sites

By Sharon Machlis

SOME MAINSTREAM retailers have begun experimenting with three-dimensional images on their Web sites, hoping consumers will be enticed by a more immersive online experience.

For now, the interactive graphics are usually small additions to most sites. Eddie Bauer last month added 3-D capabilities, linking its site to IDream Software LLC in Bothell, Wash. The IDream download is an auto-install design package that allows users to model a room and then insert various Eddie Bauer home products within it to see how they look and fit together.

3-D TECHNOLOGY

Traffic from Eddie Bauer to IDream is higher than anticipated, and about 5% of the visitors download the software. "I think that's great right out of the gate, not having marketed this anywhere," said Judy Neuman, vice president of interactive media at the Redmond, Wash., retailer.

The link was designed to give World Wide Web surfers a more interactive experience, as well as the chance for a more informed online purchase. Home product sales have been rising as a percentage of total Eddie Bauer online pur-

Eddie Bauer uses 3-D features to let customers try home product arrangements

chases, Neuman said, and Eddie Bauer hopes IDream will begin working on a version of the software for its line of clothing.

PLAYING GAMES

Philips Mobile Computing Group recently posted a 3-D game at its Web site (*www. velo.philips.com*) that touts its Velo handheld computer. In the contest's first 48 hours, there were more than 200 entries — "pretty good, considering people

Interactive sites, page 38

AOL user decries court ruling

By Matt Hamblen

A RECENT COURT ruling involving America Online, Inc. may give managers of World Wide Web sites and bulletin boards some comfort that they are protected from legal liability for allegedly damaging messages posted by visitors to their sites.

A federal appeals court ruled last month that, under the Good Samaritan section of the Communications Decency Act, online providers are immune from lawsuits over information posted by third parties. But a Seattle man was left wondering who will watch out for him and others harmed by anonymous Internet attacks.

Kenneth M. Zeran, 51, so far has unsuccessfully sued Ameri-

AOL user, page 39

> **Federal ruling protects online providers, but one person cries foul.**

Review ▶ Catalogs online

And though I specifically selected women's rain pants, some men's items appeared.

Unlike at L. L. Bean, international shipping is available, and the site is translated into four languages other than English — French, German, Spanish and Japanese.

SPIEGEL, INC.

My next two stops, Spiegel, Inc. and Lillian Vernon, were second-tier compared with the outdoor outfitters above.

At Spiegel's Web site, a fat, bold typeface made the home page look sloppy and inelegant.

In addition, the site makes heavy use of frames, which often produce a cramped view. For example, the "Gifts for Him" section took almost two minutes to download at 28.8K bit/sec. and produced a long, narrow frame on the left-hand side of the screen.

Also, it would not let me place a final order myself. Instead, a message said that when I placed an order, a sales associate would add the correct tax. Why isn't the tax calculated automatically online?

LILLIAN VERNON

The Lillian Vernon catalog's claim to fame is the weird stuff it offers cheap (and the cheap stuff it offers cheap).

And, of course, the company will slap names and monograms on almost all of its items.

When I first visited on the day after Thanksgiving, I could not shop.

A click on the "Online Catalog" button brought this grammar-challenged apology: "We're sorry, the file you requested does not exist on this server. Please recheck the file name and if correct then the file must have been moved and we apologize for the inconvenience."

When I tried again a few days later, I wasn't overwhelmed.

The site's overall design is nice and simple — very easy to navigate. But there were quirks. The "Decorating Inside and Out" section wouldn't show me any gardening tools because they are considered off-season, at least in the northern part of the country.

Lillian's "Make Your Own Catalog" was similar to REI's Holiday Gift Finder.

You plug in keywords and a price range and receive a list of items that fit your criteria.

I built a catalog of items priced from $5 to $15 — a bonanza of 46 products from which to choose.

The neatly arranged, simple categories saved this site.

OZARK MOUNTAIN FAMILY

Away from the mainstream of clothes and tchotchkes, I found meat-and-cheese purveyor Ozark Mountain Family. The company has sold "fine foods by mail since 1946" and specializes in smoked turkeys. The home page urges visitors to order a turkey and then slice some off to make a sandwich. Meanwhile, the "shopkeeper" will be "wolfing it down with nothing but Coca-Cola and a salt shaker." That made me smile and want to dig deeper.

Too bad there wasn't much to explore. Although canned goods and cheeses are listed among Ozark's wares, they were nowhere to be found at the site. Just meat. A couple of amateur mistakes on the "Our Story" page — a typo and a dead link — are unfortunate.

What graphics there are are simple and fun. One shows a big pencil and a handwritten holiday shopping list with names crossed off. It's even realistically crumpled.

One neat feature: You can bookmark your order form and it will keep for three days.

All told, I couldn't do all my holiday shopping online, so look for me at the mall. I'll be the one with the cocoa. □

> **& Next week in Buyer's Guide: Experts rate top cybershops.**

HOW THEY STACK UP

	L. L. Bean	Spiegel	Lillian Vernon	REI	Ozark Mountain Family
	Freeport, Maine www.llbean.com	Northbrook, Ill. www.spiegel.com	New Rochelle, N.Y. www.lillianvernon.com	Sumner, Wash. www.rei.com	Fayetteville, Ark. www.ozarkfamily.com
EASE OF NAVIGATION	Excellent, but points off for small type	Fair, felt cramped	Excellent	Good, some type is small	Good, but slow
FRAMES	Lots	Lots	None	On some pages	None
MULTIMEDIA CONTENT	None	None	Used sparingly	Little	None
STANDOUT FEATURE	Crisp design and graphics	Clear photos of every item	None	Estimates delivery with product shipping time lines	Humor; easy to send specific items to other addresses
STYLE GRADE	A-	B-	B	B+	B
CONTENT GRADE	A	B+	B	A	C+

Interactive sites

have to download a plug-in," said Ginger Moschetta, a product marketing manager at Philips.

Philips is using software from Live Picture Corp. in Scotts Valley, Calif., whose chairman is former Apple Computer, Inc. CEO John Sculley.

But Chris Stevens, an analyst at Aberdeen Group, Inc. in Boston, questioned whether consumers have the patience for more plug-ins.

"I have talked to a bunch of companies that have tried things like that, and they've scaled back" because not enough visitors used some of the features, Stevens said.

However, officials at Rent Net a Web site with about 10,000 apartment listings na-tionwide, said the firm has had a good experience with what it calls virtual walk-throughs. "Properties that have the 360-degree [image] get seen much more often," said Jed Katz, vice president and founder of the San Francisco-based company.

It costs advertisers $58 per month for two such 360-degree photos on the site. Web surfers download a free plug-in developed by Interactive Pictures Corp. in Oak Ridge, Tenn., and then load an image of about 175K bytes.

Users can then navigate throughout an apartment using a mouse to look at the property around, up and down.

"You have your consumers who will do it and your consumers who won't," Katz said. "But more and more people are getting used to using plug-ins. By the number of downloads, it's definitely being seen." □

NEW PRODUCTS

TELEBYTE TECHNOLOGY, INC. has announced Office Web, software that provides Internet access for LAN users over a shared, dial-up connection.

According to the Greenlawn, N.Y., company, the software runs on a nondedicated PC server equipped with an Integrated Services Digital Network adapter or modem. The server uses Windows 95 or NT dial-up networking to establish a dial-up connection over which LAN traffic is routed at speeds of up to 128K bit/sec. A three-user concurrent license is $195. A license for unlimited users is $495.
Telebyte Technology
(800) 835-3298
www.telebyteusa.com

GLOBALINK, INC. has announced Globalink Intranet Translator, software that translates electronic mail, World Wide Web pages and other text files for international companies.

According to the Fairfax, Va., company, the software can translate documents both to and from English, French, German, Italian, Portuguese and Spanish.

The server software runs on Windows NT, and desktop clients can run on Windows 3.x, Windows 95 or NT.

A basic configuration starts at $5,000 per server with five clients for English and one other language. Additional clients are $100 per seat.
Globalink

(800) 255-5660
www.globalink.com

ATREVE SOFTWARE, INC. has announced WebSpective 1.5, software for managing business-critical World Wide Web applications.

According to the Cambridge, Mass., company, the software helps users manage unpredictable traffic and unreliable hardware or software for multiple host and Web servers.

A single console gathers performance information and lets users analyze hits, transactional activity and response times. It starts at $20,000.
Atreve Software
(617) 576-3400
www.atreve.com

AOL user decries court ruling

ca Online in Reston, Va. He contended that America Online should be held accountable for false and misleading messages about him posted on the service. In April 1995, an anonymous party on the AOL site posted messages shortly after the Alfred P. Murrah Federal Building bombing that killed 168 people in Oklahoma City, advertising "Naughty Oklahoma T-shirts" that used offensive slogans about the victims. The messages urged readers to call "Ken" and gave Zeran's telephone number.

Zeran received hundreds of angry phone calls — and even death threats — after an Oklahoma City radio station urged listeners to call him as well.

RANDOMLY ACCESSED

"It's important to know that I was selected at random, and it was my phone number that some nut somewhere pulled off a database somewhere," Zeran said in a recent interview. Zeran complained to America Online for several days after the first posting and after subsequent postings. America Online officials said they were frustrated because the postings were made under different accounts.

Zeran filed a federal suit against America Online in April 1996, seeking to hold the company liable for defamatory speech by a third party, but a federal judge sided with America Online. On Nov. 12, a three-judge appeals panel in Richmond, Va., unanimously agreed.

The appeals court said it would be "impossible for service providers to screen each of their millions of postings for possible problems."

But the case isn't over. Zeran's attorneys on Nov. 26 filed for a rehearing and have vowed to take the matter to the U.S. Supreme Court. An America Online attorney said in an interview that the company took "prompt and responsible action every time Zeran complained."

Companies managing Web sites should welcome the appeals court ruling but remain vigilant, said First Amendment expert Robert M. O'Neil, a law professor at the University of Virginia in Charlottesville.

The ruling "certainly is potentially comforting or helpful, but it depends on how companies maintain their systems and what they have the technical and legal capacity to remove," O'Neil said. For other people who are in Zeran's predicament, legal remedies might come from other pending cases, he added.

"The target is simply the hapless victim of an anonymous posting that can be damaging," O'Neil said. □

CUBIC CORP. has announced a stand-alone version of its CVideo-Mail program, a hardware and software package that lets users record video and audio messages and attach them to electronic-mail.

According to the San Diego company, it works with all Messaging Application Programming Interface-compliant E-mail packages. It costs $149.
Cubic
(619) 505-2030
www.cvideomail.com

JE SOFTWARE has announced JE Mail-Call, a service that lets users listen to their electronic-mail messages by dialing a Touch-Tone or cellular telephone.

According to the Mount Vernon, N.Y., company, subscribers receive a JE Mail-Call card that lets them dial in to a central server, enter a personal identification number and listen to E-mail off of their desktop computers. Messages are read by text-to-speech software.

An unlimited 1-year subscription is $99. A 30-day trial subscription is $10.99.
JE Software
(914) 699-6710
www.jesoft.com

Finally,

AN ENTERPRISE SOLUTION

FOR A COMPANY

whose budget is modest.

Here's the usual catch most moderate-sized companies find themselves in: they need an ERP solution to make themselves more competitive, but don't have the time, resources or budget to implement such a complex solution. That's why HP and Baan are offering HP & Baan Certified Solutions, scalable solutions designed for a growing business. Not only are they pre-engineered and

The Enterprise Network

LANs ◆ WANs ◆ Network Management

Briefs

10/100 switch

Intel Corp. has announced the Express 510T switch. It has 24 ports that can support 10M or 100M bit/sec. connections. It is the first in a series of switches the vendor plans to roll out in the coming months. It can be equipped with a four-port twisted-pair module, which costs $995; and a two-port fiber module, which costs $1,495. The Express 510T began shipping last week. It costs $4,775, or about $199 per port.

Lucent firewall

Lucent Technologies, Inc. in Murray Hill, N.J., has announced Lucent Managed Firewall, a hardware and software platform for protecting data networks for Internet service providers and businesses. The firewall can be scaled up as users' data needs grow. Pricing starts at $15,995.

Data protection

Network Integrity, Inc. in Marlboro, Mass., last week released LANtegrity 4.0, which provides server failover protection, retrieval of protected files and protection for symmetric multiprocessing versions of Novell, Inc.'s NetWare. It costs $6,995 for a 100-user license.

Medical supplier overhauls IT

▶ *R/3 implementation requires network and systems upgrade*

By Patrick Dryden
McGaw Park, Ill.

MEDICAL SUPPLIES distributor Allegiance Healthcare Corp. is using a $100 million information systems project to completely change its business operations.

A combination of process re-engineering and R/3 applications from SAP AG already have begun to smooth the flow of orders between 2,000 suppliers and 70,000 customers.

The main competitive goal is

Without any integrated tools and staff, "nobody knows where the problem really is" in a client/server enterprise.

**– KATHY WHITE
ALLEGIANCE HEALTHCARE**

to help control costs for a wide range of items such as latex gloves and hip-replacement kits, and deliver those items reliably

so hospitals won't jeopardize patient care.

"Our customers have to be able to count on us because this

is about life and death, not refrigerators," said Kathy White, chief information officer at Allegiance.

But halfway through the project, IS managers are beginning to recognize that managing a distributed client/server environment may be harder than overhauling internal processes and organizations.

The changes required to maintain the applications, systems and networks that support the supply chain Allegiance is streamlining are more difficult and far-reaching than expected.

First, Allegiance needed to build a firm foundation for the new applications. That means

Arena makes concessions – faster

▶ *Net package stabilizes, speeds up Madison Square Garden food sales*

By Laura DiDio
New York

TALK ABOUT A FAST BREAK.

As much as 80% of sales volume generated by a New York Knicks basketball game can occur in the 30 minutes before the opening tip-off, the 10 minutes immediately after the first

quarter and the 20-minute half-time rush.

But Madison Square Garden's dumb terminal/mainframe-based network couldn't handle the surges from its point-of-sales (POS) systems.

There were delays in processing sales and long lines at the arena's 46 concession stands.

Behind the scenes, the overburdened networks would crash, losing crucial inventory and labor-related

data about employees.

The Garden needed a network that could handle sudden onslaughts and deliver near-100% uptime to accommodate the 20,000 people who pour into the famed New York arena 320 days and nights per year.

So the Garden replaced the system with a customized version of the Aloha Quick Service POS software from Ibertech, Inc. in Hurst, Texas.

About 215 Windows 95 PCs run the Aloha software. They are connected via an Ethernet

Ibertech's Aloha Quick Service software (pictured above) provides Madison Square Garden with total redundancy to ensure against lost data and sales at the arena's 46 concession stands

SWITCH ADD-ONS
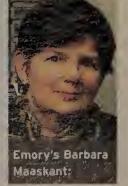
Fast Ethernet makes beeline for desktop

By Bob Wallace

HOPING TO FEED the Fast Ethernet fire, Cabletron Systems, Inc. last week announced switch modules that will let users extend the technology to the desktop without breaking the bank.

Cabletron, in Rochester, N.H., has introduced models that slash the per-port cost of Fast Ethernet by 30% — highlighting the networking technology's downward pricing trend.

Fast Ethernet was introduced as a backbone technology in 1993. It is quickly becoming a popular desktop LAN scheme, largely because of the plummeting cost of the equipment and the rise of bandwidth-hungry LAN applications, analysts said.

"It's extremely acceptable for downloading very large files and

Emory's Barbara Maaskant: Fast Ethernet is good for pulling down files from the Internet

RDBMS promised you the moon.

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EXCITING DEVELOPMENT

Medical supplier overhauls IT

replacing host systems with various midrange systems and Windows NT LAN and application servers by the time the project is finished next year.

And the company had to plan and then stress-test LAN wiring, wide-area network bandwidth and overall monitoring capability to make sure the network will be up to snuff.

"You can't overestimate how much infrastructure will kill you," White said.

For example, WAN latency proved to be a drag on an underperforming R/3 module that handles 50,000 price changes per day — which sparked complaints from users, said Steve Tindall, network technical specialist at Allegiance.

IS managers optimized the application to solve the problem, but other glitches still crop up.

CRUNCH TIME

"We're not entirely ready for this R/3 rollout," Tindall said. "We've been putting our fingers in the dike, but we're starting to run out of fingers."

And to provide a single point of control over the complex mix, Allegiance wants to apply the Unicenter TNG suite of enterprise management tools from Computer Associates International, Inc. CA's suite promises a direct business-oriented view of operations. So far, Allegiance uses only the suite's workload management function.

Like many SAP users, Allegiance required more powerful job-scheduling capability than SAP provides.

Because Allegiance already used and

trusted CA's host scheduler, it beta-tested Unicenter TNG to handle from one console tasks spanning a variety of servers, said Jim Nennig, a technical analyst at Allegiance.

"We were already familiar with Unicenter MVS, so we didn't have to learn another skill set to control Unix systems or to bring in more staff," he said.

Now that Unicenter TNG takes care of scheduling, IS managers want to attempt tasks such as managing and monitoring servers here and at remote sites, Nennig said.

But first, CA must deliver agent software for the Digital Equipment Corp. servers running Unix and the R/3 applications, said Thomas Cesar, another technical analyst at Allegiance.

"We've only scratched the surface," he said. □

Managing Re-Systemization

How U S WEST Dex moved from a mainframe to a distributed environment with PATROL

U S WEST Dex, one of many U S WEST companies, sells Yellow Pages advertising, related mailing lists and other products that are derived from telephone directories. In all, they publish over 300 directories with over 42 million printed copies.

Handling all of this publishing and taking care of nearly half a million USA and international clients calls for complete distribution of data 24 hours a day. All of the company's critical applications must be available to thousands of users.

The original mainframe needed upgrading and the decision was made by U S WEST Dex management to move to a distributed environment. Over a period of many months, operational processes were decreased on the mainframe and increased on the distributed systems.

U S WEST Dex created a new group called the "System Management Center" (SMC) to recommend products to help them ease and manage the transition. As interaction with the SMC progressed over a couple of months, one partner relationship between two vendors stood out, that of Hewlett-Packard and BMC Software.

"We found that the partner relationship between these two companies was able to satisfy a broad range of our needs. The joint presentation of their individual products tended to complement and even strengthen each other. We saw clear advantages to both vendors working with us as a single team rather than separately. We awarded them our contract jointly and plan to order more later this year," explains Project Manager Henry Vargas of U S WEST Dex.

"Our business-critical applications have been re-architected into the client/server model to help give us a competitive advantage. We use the Hewlett-Packard systems due to

their mission-critical capabilities, high performance and the ability of Hewlett-Packard and BMC Software to put together a solution."

These products will provide U S WEST Dex with the ability to collect information from their new distributed computing environment and process it to report the status of individual elements within their IT environment. They will be able to graphically show the current status of all elements of their enterprise, including networks, systems, applications and databases, and manage them through one console. They should realize a seamless, easy transition of critical systems with reduced user downtime.

"We are pleased to be working with BMC Software on this project," said Business Development Manager Travis Muesing, of Hewlett-Packard. "We have worked with them before and have always felt that our products, services, support and education complement each other. Together, we can always provide our customers with a complete, timely and cost-effective solution to their integrated network and system management needs."

U S WEST Dex plans to incorporate more of the Hewlett-Packard and BMC Software products to provide additional support for IT operations, performance monitoring and IT administration.

N E W   P R O D U C T S

Arena makes concessions – faster

TCP/IP network to a single Microsoft Corp. Windows NT server that runs BackOffice and the SQL Server database.

Ken McGuigan, the Garden's director of information business systems development, said the arena chose the POS package for its ability "to measure and consolidate all data from all concessions while operating simultaneous events, thereby providing us with better food and labor cost control."

Longtime New York Ranger hockey fan Gino Coppola said he used to wait in line 35 minutes to get a beer and hot dog. "I spend close to $100 on a game. I don't want to look at someone's back. Since the Garden got the new touch-pad PCs, I only spend 10 minutes on line," Coppola said.

The NT/Aloha network minimizes the potential for downtime because each concession stand runs as its own network. The single Windows NT Server polls each concession stand for the latest information. That way, problems at one concession stand don't disrupt other network operations, McGuigan said.

"The Aloha system gives us live data feed capabilities that provide our food services and merchandise managers with statistics on sales, inventory and labor that are updated every 20 seconds," McGuigan said.

The minute-by-minute flow of sales information lets Garden concession managers identify those food and merchandise stands where sales are lagging. "If we see a concession that's not doing a lot of business, we may decide to close it at half time and save on labor costs,"

he said.

The Garden also needed a system that requires minimal training. The Aloha POS touch screens running Windows 95 are "pretty self-explanatory," said a cashier, who requested anonymity. "It

rings up the items and automatically brings me back to the correct screen. It also gives me the correct prompts for things like refunding items. I learned it in less than one shift."

The network migration is part of an

overall upgrade that began in 1991. The changes have included remodeled seats and corporate boxes, new scoreboards and electronic marquees on the outside of the building, said Dan Schoenberg, Garden public relations director.

"The network upgrade is a big priority. This is New York City. Our customers pay top dollar for entertainment events, and they deserve the best service we can offer," Schoenberg said. □

From Desktop to Enterprise

Leaders in I/O Technology

The demand for device driver portability between operating systems and host platforms, combined with increasing requirements for intelligent, distributed I/O processing has led to the development of the Intelligent Input/Output, or I_2O specification. BMC Software and Intel Corp. are working closely with the I_2O Special Interest Group (SIG) to bring I_2O-compliant technologies to market, including integrating PATROL Management solutions with the Intel i960RP I/O processor.

"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I_2O-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower

customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I_2O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications.

Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centered technology emerges into the marketplace, and we think it's going to be an exciting ride."

NEW PRODUCTS

INNOMEDIA, INC. has announced InfoBlazer, an Integrated Services Digital Network (ISDN) terminal adapter with three user ports: one for connection to a PC and two for connection with regular telephone lines.

According to the Santa Clara, Calif., company, the adapter's two analog device ports let users connect any two analog devices, such as fax machines and telephones, to the same ISDN line used by a PC.

InfoBlazer then lets users transmit or receive data on their computer, talk on the phone and send or receive faxes simultaneously.

It supports multilink Point-to-Point Protocol and Internet access up to 128K bit/sec.

InfoBlazer costs $249.

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Fast Ethernet on desktop

also can be used for applications such as groupware, video and anything where you have heavy graphics," said Barbara Maaskant, executive director of information services at Emory University in Atlanta. "We've found it's good for pulling down live presentations from the Internet."

Sales of Fast Ethernet modules have more than quintupled in the past year alone, from $42.6 million in the second quarter last year to $239.4 million in the same quarter this year, according to the Dell'Oro Group in Portola Valley, Calif.

"We use it in selected workgroups where we need its bandwidth to support specific map-imaging applications," said Jan Nakshige, a senior network analyst at the Morin county government in California. "We also use it to tie Ethernet segments to routers."

Cabletron's Fast Ethernet modules illustrate the price reductions. The vendor's latest Fast Ethernet module for the MMAC-Plus switch costs $653 per port and replaces one that cost $2,000 per port. Cabletron's Fast Ethernet module for its SmartSwitch 6000 costs $562, compared with $750 for its predecessor.

N E W
P R O D U C T S

GADZOOX NETWORKS, INC. has announced the Gibraltar GS hub, a modular Fibre Channel-Arbitrated Loop hub for storage area networks.

According to the San Jose, Calif., company, the hub has 12 Gigabit-speed ports that can be configured with a combination of copper or fiber-optic Gigabit Interface Converters.

Pricing starts at $6,000, or about $500 per managed port.
Gadzoox Networks
(408) 360-4950
www.gadzoox.com

SIDEWARE SYSTEMS, INC. has announced Net Notions, a groupware messaging system that uses a workgroup-specific, server-based database.

According to the North Vancouver, British Columbia, company, the software lets users create, share and update electronic notes that can be attached to Windows-based documents and World Wide Web pages controlled by workgroups.

The software costs $79.95 for a five-user starter kit.

After February, it will cost $295 for five users.
Sideware Systems
(604) 986-6121
www.sideware.com

Rival 3Com Corp. plans to make deeper cuts.

"We're at $800 per port on our Core-Builder 5000, but will take that down to $399 in March," said Brendon Howe, product line manager at 3Com. "I absolutely expect a 30% to 50% price drop overall over the next year. As the price drops, [sales] volumes go through the roof."

Cisco Systems, Inc. will do whatever it takes to remain competitive in the Fast Ethernet market, said Soni Jiandani, director of marketing for Cisco's LAN switching unit.

The San Jose, Calif., vendor already sells a Fast Ethernet module at $416 per port for its Catalyst 5000 and 5500 data center switches. Cisco will likely come up with modules featuring 12 or 24 more ports, but Jiandini wouldn't say when.

Cabletron is studying the Fast Ethernet product line it will inherit from the acquisition of Digital Equipment Corp.'s networking unit but hasn't decided what to do with it yet, a Cabletron spokesman said. □

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Morphing with the Web

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editor's note

Think of the Internet, and think "opportunity." This rapidly evolving medium is a melting pot where psychologists, security experts — even musicians and dancers — are coming together to create a new breed of corporate IS worker. That's because there's a wealth of opportunity for a broad range of people who are eager to learn and can embrace change.

Some of these workers are self-trained, some are "Web certified," and some learn on the job. (See "Training mind-set," page 18.) And even within a company, positions are constantly changing, as the demand for Internet talent increases and evolves. Some companies don't even commit to specific job titles; rather, they use more general titles such as "Web consultant" or "architectural consultant."

The Internet has changed our lives in the past few years, and it's not going to stop any time soon. With this escalating change comes the demand for people who can do everything from Web development, support and maintenance to business roles such as marketing and finance. And as the Web extends its capabilities via intranets, extranets and electronic commerce, for example, future career growth is assured (see "Know it all," page 12).

So what does all this mean for you? More money? Maybe. Better jobs? Possibly. For the most part, high demand for Internet skills means high salaries and bonuses for the right people. (See "High stakes," page 16.) Although great perks sometimes accompany 60-hour (or more) workweeks and "start-up mode" confusion ("Welcome to reality," page 10), if you play your cards right, you can work with the most cutting-edge technology, work flexible hours and get some high visibility.

Whatever the job title, and whatever your employment background, it's an exciting time to move into a Web career. All it takes is a little creativity and flexibility, and you could morph into the next Web worker.

Joyce Chutchian-Ferranti

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Internet: joyce_chutchian@cw.com

Computerworld Internet Careers staff

contents

By Alice LaPlante

Morphing with the Web

Explosive growth demands new breed of Web worker

Ask Tim Hewitt what's printed on his business card, and first he'll laugh. Then he'll admit to being the webmaster for Scana Corp., a $215 million energy-holding company based in Columbia, S.C. "But it's kind of pompous-sounding," he says of the title bestowed upon him two years ago.

Moreover, it's misleading.

Although Hewitt acts as central coordinator for Scana's external Web site and internal intranet, he is just one part of an ever-growing team of close-knit technologists, artists, writers, business analysts and departmental representatives.

"There's no way I could consider myself 'master' of this enormous and ever-growing operation," Hewitt says, referring to how Web technology is being used by Scana to deliver financial reports, news and other energy-related information to consumers and investors — as well as to disseminate everything from personnel policies and procedures to internal newsletters to Scana's employees and managers.

Businesses are now seeing the next generation of corporate Web professionals emerge from the information systems ranks. And Internet/intranet veterans like Hewitt are gratefully relinquishing most of the many hats they've been wearing since they first dove into cyberspace.

"We're moving from generalists to specialists, which is a very exciting thing," notes Brian Smith, who just accepted a job as global finance systems support analyst at Chicago-based NationsBanc Corp. As a member of a newly created department within the bank's information technology division, Smith and his colleagues will support the plethora of Web-based financial applications currently being developed to better service NationsBanc's

international commercial customers.

This sounds less grand than his previous position of webmaster, but "it's actually a promotion," says Smith, who started as a quality assurance tester with the bank six years ago. Along with some friends in the quality assurance department, Smith began "playing" with Web technology to see if it could be harnessed to solve some basic documentation and information-sharing problems. It could, and did. People noticed. Now, these former colleagues find themselves rapidly advancing through the ranks of NationsBanc's IT division on the fastest moving career track of the '90s. "Who would have thought it?" Smith asks.

"If you'd asked me 15 years ago, I would never have predicted my career would take this path," agrees Hewitt, who evolved from the only Scana employee dedicated to Web activities to his current role as a facilitating member of a diverse, multifaceted team. He has a master's degree in creative writing from the University of South Carolina and, among other things, worked as a newspaper stringer, wrote scholarly articles for film journals and designed technical documentation.

Surprisingly, this is not an unusual background for a Web professional.

Today's best and brightest Internet workers are as likely to have degrees in anthropology as in more appropriate IT-related fields. Not only are they technically proficient — and insatiably curious about emerging technologies — but they also have a passion for understanding the human interactions, organizational processes and the underlying business models of the companies for which they work. They're likely to have a creative bent. Even if they aren't artists, they enjoy working with people who are. They are multi-faceted and social.

Can one person possess all these attributes? Probably not. Increasingly, corporations are splitting the webmaster position into many jobs, creating entire departments and embedding Web workers into every line of business. The result is a diverse, multifunctional team with a broad array of collective talents.

"When a company tells us they're looking for a webmaster, we just have to crack up. 'Yeah, right. One person can do all that,' " says Judith Fleenor, director of project management for San

> "We expect increasingly clearer definitions of individual Web jobs and responsibilities to emerge in the coming year."
>
> – David Foote,
> Cromwell Partners

Francisco-based Silicon Reef, an online communications company specializing in delivering Internet/intranet technology to corporate clients.

"Over the next two years, companies will begin differentiating a variety of Web-related jobs," says David Foote, managing partner of Cromwell Partners LLC, a Stamford, Conn., consulting firm specializing in IT staffing and compensation issues. In companies that would have had a

single IT worker dedicated to Web activities, "we're seeing new positions being created for specific functions related to Web development, support and maintenance," Foote explains. He cites Web specialists dedicated to specific business functions — the needs of finance or marketing departments, for example — and to the different emerging Web "channels," including Internet, intranet, extranet and business-to-business electronic-commerce applications, to name just a few. "We expect increasingly clearer definitions of individual Web jobs and responsibilities to emerge in the coming year," Foote says.

Foote talks about these trends as if they were years in the making. But his research shows that almost 80% of corporations created their first dedicated Web positions within the last two years. Of those companies, 20% have had a dedicated Web job in place for less than a year. "Like everything else in the Internet world, things are evolving very, very quickly," he says.
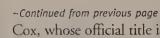
Multiple personalities

Profiles of these emerging corporate Web professionals indicate they are an eclectic bunch.

Yes, you'll find computer science majors. But you're just as likely to find visual artists and dancers. Architects and psychologists. Marketing wizards and musicians. People without college degrees. People who have earned multiple Ph.D.s in the liberal arts.

Not to mention people like Ken

Cox, whose official title is senior architectural consultant at the National Association of Securities Dealers (NASD). (See profile, page 7.)

His role is to act as resident Web consultant for any NASD department — and there are an astonishing number of them — interested in exploiting the potential of Internet technologies to meet its specific business challenges.

Needless to say, Cox's undergraduate degree is in … you guessed it, agriculture. (Although, like many Web aficionados, he went on to earn a master's degree in computer science at night after learning where his heart lay.)

At Silicon Reef, which delivers to its clients everything from fundamental Web page designs to corporate intranet applications to global electronic-commerce systems linked to back-end legacy databases, Fleenor finds it most efficient to divide her staff into four functional departments: design, production, technology and project management. This is certainly not a typical technology operation.

"Believe me, you cannot have a successful Web strategy without pulling together a very diverse range of talent," she says.

Certainly all Silicon Reef employees are technically proficient. "That's a given," Fleenor says. But those working in the design department tend to have a background in the creative or visual arts as well as being proficient at HTML. Members of the production department will be adept at VRML coding, will know Shockwave and Macromind Director inside out and will be expert at creatively pulling together content and incorporating it into the aesthetically pleasing environments created by the design department. Fleenor's technologists are responsible for writing the applications and providing all the necessary links to corporate clients' legacy systems. And the project managers make sure all these disparate elements come together without technical, organizational or procedural chaos.

This final responsibility is critical to the success of any Web endeavor, according to Fleenor. "And it's the one that most companies forget when they do it on their own with too few people," she says.

Webmaster, create thyself

Perhaps the most telling finding of Foote's research is that only 39% of companies are managing their Web efforts from within IT (this includes intranets as well as external Web pages and electronic-commerce ventures).

This doesn't mean that technical skills aren't important. But it does seem to mean that other, diverse skills are equally valued.

So where does this new breed of IS worker come from? Mostly, they're inventing themselves.

Michael O'Hara earned a bachelor's degree in industrial psychology from the State University of New York at Buffalo in 1990. His first job was working on the help desk in MCI Communications Corp.'s IT department. His formal technical training? "I'd used computers in my college course work," he says. It was while answering users' calls for help that O'Hara first became interested in the

> "Believe me, you cannot have a successful Web strategy without pulling together a very diverse range of talent."
>
> – Judith Fleenor, Silicon Reef

Web, because he saw its usefulness in collecting and sharing reference material with his colleagues. "This was a pretty basic solution to a pretty basic help desk complaint," O'Hara says.

It's the same old story. Five months after building this first primitive intranet ("It was 80% static data"), O'Hara was promoted to a systems administration job within MCI. He earned his MBA in information systems at night while pursuing his enthusiasm for emerging Web technologies in his new role as a database designer at MCI. Today, O'Hara holds the prestigious title of international webmaster for Information Builders, Inc. in New York. He maintains the software and services giant's global intranet and maintains libraries of information for employees scattered around the world. And he likes the direction his career is taking.

As people learn more about the Web, the traditional model of the technology worker no longer applies.

"A new breed of workers is needed," says Joseph Smith, chief information officer at Blue Cross/Blue Shield of Arkansas in Little Rock. He recently created a number of IT positions with a Web-centric focus to build an all-

important network that will integrate Blue Cross/Blue Shield with healthcare providers. To that end, he is hiring people who are knowledgeable about Web browsers and understand data management. But he says he also needs professionals with visual design skills who know the subtleties of the healthcare business.

Not surprisingly, Smith can't find many of these skills in the local labor pool. So for the most part, he says, "we're developing these people ourselves and promoting them from within." And it's not as if Smith can predict the diverse talent he'll require. "Our own understanding of what we need changes as we get further into the project," he says.

"Everything is very fluid … it has to be," agrees John Bruns, senior vice president of technical architecture for global software technology support at NationsBanc Services, Inc. in Chicago. Bruns says new positions — and even departments — are emerging all the time to deal with the impact the Web has had on the corporation.

A case in point: NationsBanc's Smith was drafted to help with the bank's then-fledgling Web initiative because, "I happened to be one of the guys who had been playing with the technology," he says. How did he get the title of webmaster? "No one else claimed it," he recalls. He taught himself the necessary skills, mostly through hands-on experimentation and reading everything he could find.

And there are advantages to a lack of traditional education.

When you don't have formal training — and most early Web professionals didn't, simply because none was available — "no one tells you what you can or can't do. You make up the rules," says Tom Greer, a systems analyst at Printing, Inc., a commercial printer in Wichita, Kan., who began his IT career "stacking boxes at [retail giant] ComputerLand."

Greer builds Internet and intranet applications for Printing's corporate clients. A recent application, completed for a large international restaurant chain, allows scattered field offices to log on to a Web site and securely customize the menu to meet local appetites and ingredients.

Like other Web gurus, Greer has taught himself everything from Java to Acrobat to SQL. Hired as a customer service representative six years ago, Greer came up with the idea to offer Printing's customers free electronic links to the printer's back-end systems.

"Forget conventional wisdom. You can't think of this as a career in com-

puters. That's an incomplete means to an end. You are in the manufacturing business. Or the printing business. Or the restaurant business. If you don't understand the intricacies of your industry, you won't add that much value," Greer says.

Far from regretting the path he's on, Scana's Hewitt sees a technological future in which his creative aptitude will serve him extremely well, both personally and professionally.

"It's the nature of the Web that you must have a conglomeration of different talents," he says. Moreover, "there's so much opportunity out there," he marvels. "We're just beginning to understand where the technology will lead us." ◇

Alice LaPlante is a freelance writer based in Woodside, Calif.

New Web Jobs Emerging

Meta Group's "I-net" organizational model (covering corporate Internet, intranet, Web and electronic-commerce ventures) includes managerial, technical and content positions. Interestingly, Web content/marketing jobs pay 4% to 16% higher than technical positions within the same industry.

Management/Liaison Roles:
- Director, Web systems
- Project manager, Internet
- Project manager, intranet
- Project manager, Web
- Project manager, electronic commerce
- Web architect
- Business technologist (account manager)

Technical/Infrastructure Roles:
- Webmaster (technical)
- Web systems administrator
- Web support specialist
- Web developer/programmer
- Web security manager

Content/Marketing Roles:
- Webmaster (content)
- Web marketing editor
- Web corporate editor
- Web content contributor

***Source:** Meta Group, Inc., Stamford, Conn.*

work life · skills · security · salary · training

Project management skills harmonize with company's goal to bring music to the 'net

The mainframe may seem an unlikely path to the Web; the oil and gas industry an even less likely byway to the music business. But the Internet breeds improbable career opportunities, and Eric Johnson parlayed his experience maintaining a mainframe database at Exxon Research & Engineering Co. into a position responsible for Web site development and Internet infrastructure at music label BMG Entertainment.

His project management skills provided the link between the two positions: "Basic project management remains the same across all types of projects," says Johnson, manager of Internet services at BMG, in New York. "If you can move from one technology to another, you can take your project management skills with you."

BMG was about to go live with its first genre Web site — urban music site www.peeps.com — and had ambitious plans to develop more, as well as similar sites for its various labels, when Johnson landed his job in February 1996. Although he lacked some of the specific technology skills the job required, such as Sybase and HTML, Johnson was confident he would succeed. His achievements at Exxon convinced IS management at BMG.

Unix was the platform of choice at BMG, which also had plans to tie its genre sites to back-end databases eventually. At Exxon, which he joined shortly after earning a master's degree in information resources management from Syracuse University in 1991, Johnson had been supporting a mainframe-based database and document management system and a textual, Unix-based database, called QuadraStar. Ultimately, he'd begun putting browser-based front ends on those systems — first Mosaic and later Netscape — to give end users access to the information without a mainframe account. In the process, he picked up sufficient Web expertise and project management experience to transfer to BMG.

Right man for the job

"Mainly, they wanted a technical manager who could manage the platform, someone who had a general knowledge of Web technology, who could follow the technology, make basic recommendations and keep up with the evolving technologies," he recalls. "I really felt I was qualified; there was no question."

His first order of business was to learn HTML, which took just a few days, and to get up to speed on Sybase. For that, he bought a number of books and spent time working closely with BMG's Sybase database administrator.

Since Johnson was hired, BMG has launched two more genre sites, alternative music site www.bugjuice.com and country music site www.twang this.com, and a number of sites for the company's labels. Johnson is the project manager for each genre site; he provides project and technical management for the Web infrastructure to support BMG's labels and individual artists in creating a presence online.

Most of his days are spent coordinating the efforts of the technical, marketing and label staffs to keep the databases running, to develop promotions and to gather content for the sites. He directly manages five or six technical staffers and works in concert with his counterpart from the marketing department.

A typical project was the development of a Web database to collect and store demographic information on visitors to the genre sites. Employing a Sybase back-end database and WebSQL middleware, Johnson and his team created online forms that query users about their musical tastes and feed the information live into the database.

Recently, Johnson has been busy acquiring electronic-commerce skills in preparation for future Web applications that BMG plans. He also is assisting the company in developing an Internet security policy.

"Working on the Web for a music company is one of the greatest jobs you can have right now," he says. "The industry is really well positioned to take full advantage of the Web in marketing and sales. It is a really fun job. Plus, I get free CDs."

Leslie Goff is a freelance writer based in New York City.

Melody

By Leslie Goff

maker

Photograph: Brian Smale

High Roller

By Leslie Goff

Gambling on a new role at Charles Schwab, and a new online trading site, pays off

Vincent Phillips was the senior manager of software engineering at Charles Schwab & Co. with a long SNA-CICS-MVS career under his belt when the opportunity to project manage the company's online trading site came his way. It was one rung down on the management ladder he'd been climbing since starting his career in 1981, but he reckoned the best way to move up might be to step down.

In early 1995, Schwab had already launched a private dial-up trading network for its clients to manage their own trades, Phillips recalls.

"That was growing really fast, a lot of new Internet companies were cropping up, America Online was exploding; it looked like the 'net was the future," he says. "The job felt like a big strategic opportunity because the electronic brokerage enterprise was a start-up venture within the company. It was a chance to be on the ground floor."

His gamble paid off. After eight months on the job, and only three months after the site launched, Phillips was named director of systems engineering, a promotion he is convinced would have been much longer in coming had he not been willing to take the project manager role. But he says he knew well before the promotion that he had made the right move.

Success came quickly

"In only two weeks after we went live, we had completely blown away all our marketing projections," he says. "That's when I realized commercial success was possible on the 'net. I had thought it was true, but here it was in front of us, the indisputable truth."

Phillips declines to specify the market projections. But he says that his team had planned to increase capacity every other month, and, in reality, they had to add capacity every day for the first five months the site was online. By last summer, the site had more than 750,000 regular customers, according to Phillips.

His group is responsible for specifying, designing and managing software development projects for Schwab's electronic brokerage enterprise.

The online trading site (www.schwab.com) features delayed quotes for any listed stock and real-time quotes for registered Schwab customers; online trading of mutual funds, bonds and treasuries; tools to help users select mutual funds and allocate assets; college fund and retirement planners; and research and performance charts.

Coming from a mainframe background, Phillips had to educate himself in Internet protocol networking principles, Web applications development, C++, public key encryption, the secure socket layer, HTTP protocols as well as Common Gateway Interface.

He also became an "Internet

> *"I did most of my reskilling on my own. I became an Internet junkie for a while, discovering what was out there, what was special. And I began reading like crazy."*

junkie," he says, exploring financial services and technical support sites, as well as sites that appealed to his personal interests.

"I did most of my reskilling on my own," he says. "I became an Internet junkie for a while, discovering what was out there, what was special. And I began reading like crazy."

The best part of his new job, he says, is seeing the impact it has on the company and on customers.

"It's very hard on the systems software side to illustrate where you have had an impact on the company," he explains. "I mean, the company is not going to send a brochure out to all its customers announcing that we just did a CICS upgrade."

But adding new quotes to the Web site is visible internally and externally. "We have almost 1 million people using the product we developed. I feel like we are affecting their lives." ◇

Profile: Vincent Phillips, Director of Systems Engineering, Charles Schwab & Co., San Francisco

Photograph: John Harding

This network architect spotted the Internet on the horizon, and now his Web star is rising

When Ken Cox accepted a network architect position at the National Association of Securities Dealers (NASD) in 1990, one of his very first moves at the Washington, D.C.-based trade organization was to officially register the company's Internet domain name (nasdaq.com) with InterNIC.

No, this wasn't part of Cox's job description — he'd been hired to convert the NASD coaxial-cable LANs over to a 10Base-T structured wiring system.

In fact, few people at NASD — or anywhere outside the scientific or academic community, for that matter — knew anything about the Internet. But Cox had an intuition.

"Even back then, even when no one else at the company cared about this thing called the Internet, I had a feeling they might care some day," he recalls.

In fact, Cox's feeling about the importance of this new technology was so strong that during the next two years, while throwing himself wholeheartedly into converting NASD's networking infrastructure by day, Cox also immersed himself in learning all he could about the Internet on his own time.

Through the back door

Thus, like so many of today's rising information technology Web stars, Cox came in through the back door.

"In my case, you could even say it was through the barn door," he jokes, referring to his undergraduate degree in agriculture from the University of Delaware. His first job out of college was at Martin Marietta (now Lockheed Martin Corp.) working on microwave radio projects. After two years, he accepted a job doing computer support in the information systems department and liked it so much that he earned a master's degree in computer science by attending night school. After a brief stint at a now-defunct Department of Defense contractor, he was offered the networking job at NASD. Today, Cox is NASD's Internet/intranet guru.

Although he has been fulfilling this role informally for more than five years, Cox was officially awarded the title of senior architectural consultant only two years ago, when the centralized Advanced Technology and Integration (ATI) group was formed.

ATI's charter: To get involved early on in the development of business applications of all sorts being pursued by various NASD user departments and "to get an early heads-up of what new initiatives are going to mean to our enterprisewide infrastructure," says Cox, who is one of 10 technology specialists working with ATI and the only one specializing in Internet/Web projects. Cox can be involved in as many as a dozen Internet-related projects at a time. He is usually called in at the "groundbreaking" stage of a proposed application — he provides an optional, not obligatory, service. He can do everything from help define user requirements to help design the architecture, from testing vendor products to explaining the importance of maintaining accurate and timely content on an intranet site. He usually withdraws from a project when he believes it's relatively stable and safe in the hands of the people who will maintain it to NASD's internal IS standards.

"That can be a difficult call," he admits. His yardstick: When he sees the majority of day-to-day tasks required by the Web site or application being adequately handled by non-ATI NASD employees. "That's when I feel I can reasonably walk away — when I'm fairly confident they understand all the issues and processes involved in managing and supporting the system," he says.

As far at the skills needed, Cox insists that a Web application is "really just another information system, in which diagnostic skills are critical." Being able to understand the myriad components of a Web application in order to break down and isolate a problem is essential, he stresses. But so is the ability to listen. "You need to understand not just what customers need, but what they *expect* you're going to be able to give them," he says.

Like other Web professionals, Cox advises self-motivated career development efforts. He reads trade and business journals voraciously and takes advantage of free vendor seminars on topics he's interested in exploring. Cox recommends investing three to five hours a week of personal time in learning something new about the Web. His personal to-do list for the next six months includes learning everything he can about component-based Web development, X-500 infrastructure and the Microsoft Corp. Windows NT security model.

As far as future goals, Cox would like to stay on a technical, rather than a managerial, career track if possible. He aspires eventually to a chief scientist or chief technical officer position within a corporation. He isn't interested in joining a start-up or going independent. "I really enjoy this consulting role within a structured business," he says. He feels fortunate that NASD is a large enough organization to allow him to continue growing in this area. "A lot of people would have to go outside to achieve this kind of exciting career growth," he says.

By Alice LaPlante

Home grown

By Alice LaPlante

Teamwo

From psychologists to software eng

A MOTLEY CREW: A Cambridge Technology Partners Web development team comprises (from left) Scott Cornell, creative consultant; Ben Taylor, services manager, interactive solutions; Kipp Lynch, cognitive design manager; Lee Dingle, worldwide director of interactive media and electronic commerce (opposite page) and Mark Sifling, director of electronic commerce and systems integration (not shown).

Photograph: Joshua Touster

A t Cambridge Technology Partners, it's certainly not lonely at the top.

If anything, information technology professionals at the $237-million systems consulting and development company might sometimes wish for a chance to go solo on an Internet/intranet project.

Not a chance.

That's because of a unique multifunctional team approach to Web-based development — one that makes sure a diverse group of individuals, including artists, writers, project managers, business process experts, psychologists and, naturally, software engineers and applications developers, all contribute equally to client initiatives.

So even though there's certainly a place for stereotypical computer geeks on the Cambridge team, they can't necessarily expect to dominate.

The idea is that the kinds of Internet/intranet projects currently under way at clients of Cambridge Technology are too complex, and way too important, for a purely technocentric approach to fly.

Founded in 1991, Cambridge Technology Partners, based in Cambridge, Mass., currently employs nearly 2,550 workers in 41 offices around the globe. Nearly half of Cambridge Technology's current worldwide consulting jobs have an Internet/intranet/Web component. Recent

Profile: Cambridge Technology Partners, Cambridge, Mass.

rk is good work

neers, Web development groups aren't one-person shows

electronic-commerce ventures include building a Web-based automatic inventory control system for Office Depot, designing a customer service and support application for Atlanta-based Security First Network Bank that is accessible through the Internet, and helping Sun Microsystems, Inc. enhance its customer-services Web site.

Cambridge Technology racked up revenues of $237 million in 1996, which represented more than a 50% increase over 1995 sales of $156 million. Revenues for the first half of fiscal 1997, posted June 30, were $154.4 million, up 49% from the same period in 1996.

Cambridge Technology's electronic-commerce methodology came out of an existing mantra that permeated the ranks of Cambridge technologists and consultants when working on a project: "Make it useful, usable and engaging."

Consumer mentality

"These are the critical factors," says Lee Dingle, worldwide director of interactive media and electronic commerce at Cambridge Technology. "And we found there was a very big difference between traditional systems development efforts and Web-based solutions." Primarily, she says, "end users have much more of a consumer mentality — the notion that they have choices and can accept or reject a particular application — than a typical user of a business application would have."

Called Co-RAD (for cooperative rapid application development), this multifunctional approach is specifically designed to bring together all the diverse talents necessary for a successful electronic-commerce application, Dingle says.

The heart of Cambridge Technology's approach to the Internet is in its focus: Rather than depending on traditional IT systems development tactics, Co-RAD uses a consumer-oriented product model, Dingle says.

So the first thing the Cambridge team does is engage the client in a

four-week "product definition workshop" that specifically looks at the proposed application as if it were a consumer product that users would have the choice of purchasing or not.

After the initial "product" is defined, there's a more traditional design and development phase that takes between eight and 12 weeks to complete. But even here, Cambridge digresses from an IT-centric approach. Artists, psychologists, business analysts, writers, editors, programmers and, of course, users cooperate intimately in all stages of design and development.

"Creative" team members such as Scott Cornell (his formal title: creative

consultant) can have educational and professional backgrounds in everything from graphic design to animation, video production, editing and writing. "Unlike a database or C programmer, who is primarily concerned with how to build something, my job is the entertainment and engagement aspects of an application," says Cornell, who, like his "creative" colleagues at Cambridge, will do hands-on graphic design and multimedia development using HTML or VMRL.

"Cognitive" professionals such as Kipp Lynch act as the eyes, ears and voice of the ultimate consumer of the product. (In traditional IT terms, this is the end user of the application.) Lynch, whose official title is cognitive design manager, spends most of his time with Cambridge Technology

clients at the very beginning stages of a project, "looking at the big picture, and not letting the technology alone rule what's going to happen," he says. He'll study the way potential users behave with and without technology, in order to come up with the most appropriate usability designs. For example, for a recent client project involving an interactive television application, Lynch spent hours in local video stores, observing and talking to people as they chose titles to rent for the evening.

Technologists such as Mark Sifling, whose title is director of electronic commerce and systems integration, are responsible for everything from writ-

ing Java scripts to SQL coding to designing middleware that links back-end legacy systems with the Web or Internet. And business process experts such as Ben Taylor (services manager, interactive solutions) make sure that no one loses sight of the end goal of the project: To make a business more competitive.

All walks of life

Where do these New Age Web professionals come from? Everywhere.

Lynch has a Ph.D. in cognitive psychology. Among other things, he has studied dance in New York and has held teaching positions at Xerox Palo Alto Research Center and Boston University. All of this is relevant, he says. For example, his dance background

helps with his cognitive work because "understanding how people perceive movement as being graceful, or not, is critical when designing usable applications," he says.

Taylor was a semiotics major at Brown University, although he also immersed himself in 3-D animation and virtual reality modeling course work. Sifling has an undergraduate degree in physics from Cornell University and an MBA in information technology from the University of California at Berkeley. Between tours as a naval officer, he paid his dues in network administration and database design work.

The leader of this motley crew, Din-

"End users have much more of a consumer mentality — the notion that they have choices and can accept or reject a particular application — than a typical user of a business application would have."

— Lee Dingle, Cambridge Technology Partners

gle, has an educational and professional background that she admits has been "all over the map." Although originally earning an undergraduate degree in computer science, she got "very bored" working as a traditional software engineer. She first got into multimedia through creating 3-D images of satellite maps. After immersing herself in computer animation, graphics, interface design and related human-factor engineering endeavors, Dingle joined Cambridge Technology three years ago, where she found a recognition that people with successful careers in electronic commerce tended to be hybrids.

"Although a technical background is certainly important, a leaning toward the creative or cognitive side of things was a very good thing," she says.

Welcome to re

By Rochelle Garner

Working in an Internet career has its benefits — but with the good comes a lot of work, change and confusion

A h, the lure of the Internet. Who wouldn't want to work with the most attractive communications and information medium to have come along since television?

There's just one problem. There's almost no way of knowing, as a gross generality, whether such jobs will make you happy. The reason: From company to company, burnout is an issue — or it isn't. People get to work with the most cutting-edge technologies — or they don't. The work itself is exciting — or it isn't.

Still, there are points on which everyone agrees. The first: "This isn't nearly as glamorous as people think," says Mark Hatch, director of business development at Avery Dennison Office Products Group in Diamond Bar, Calif. "It's hard work."

And the second point? That working with the Internet, World Wide Web and all things TCP puts people in the spotlight of corporate celebrity. Forget "Cheers." *This* is the place where everybody knows your name. "People stop you in the halls and ask you about the Internet, and it

ality

feels good to know that people are interested in what you do," says Brian Childers, an electronic-commerce analyst at Snap-on Tools, Inc. in Kenosha, Wis. "It can be a bad thing, too, since everyone also sees if I make mistakes."

Clearly, knowing whether this sort of career will suit you will hinge on your answer to the question: Do you enjoy that kind of attention? "There are profiles of people who like or need to have their work displayed," Hatch says. "They get real gratification from accomplishing something that's visible to lots of folks. This work does attract people who have a psychic need for that kind of exposure — and I would consider it a potentially important criterion for taking this sort of job. If you don't really care if your work shows up, you're better off doing the sort of stuff where you have better control over your hours," Hatch says.

Crispy critters

OK, let's talk about hours. Are they long or aren't they? "I'm too busy to talk now — and I guess that sort of sums up my answer," says Michael Zimbalist, general manager of United Media Online Services in New York, adding he puts in 60 hours a week, on average.

Not so for Childers. "I get in around 9 a.m. and get home around 6:30 or 7 p.m.," he says. "My hours aren't bad."

In fact, the hours Internet employees work seem to be all over the map. In some places, 60, 70 or even 80 hours a week are the norm. In others, 50 hours tend to be standard. With discrepancies like these, how will you know if you've signed up for a one-way ticket to burnout? The answer lies in knowing the size and business goals of each company's TCP-based efforts.

"One company may have a large team of experienced professionals, so they may be required to put in only 40 hours a week, while another company may just be getting into the effort with only a few people on hand," Childers says. "In that case, the Internet professionals will be extremely busy."

But in some ways, size is less of an indicator than the reasons a company decides to put up an intranet or Internet site. Is the purpose retail? Customer support? Chances are, the more entrepreneurial the Web effort, the longer your workday will be.

"We say the more boring the company's market area, the more likely the Web application will help generate business for the company," says Marc Rettig, vice president of design at Digital Knowledge Assets LLC, an Internet consultancy in Chicago. "The Internet typically creates an entrepreneurial, or

start-up, spirit even in the most established companies."

Roll up your sleeves

Now think about what working at a start-up means, besides just long hours. To help a nascent business grow up, its members absolutely must pull together as a team, with marketing, sales and information systems working side by side. But the Web is adding another, even more interesting element. Businesspeople are becoming more technical, while technical pros are learning about business.

For proof, Consider Virtual Vineyards, an online wine company in Palo Alto, Calif. "Everyone here is reasonably fluent in HTML, and everyone sells wine," says Robert Olson, president and CEO. "Of the 16 people here, six are qualified to program in HTML, but only one does. The people I hire have skills in customer service, warehousing, marketing, programming and engineering. Everyone worries about new technologies, keeping the machines running and modifying information on the site — and everyone is responsible for greeting customers and noticing when a product isn't moving."

Given that Virtual Vineyards is both a start-up and an electronic retail operation, it comes as no surprise that employees routinely put in 80 hours a week. But what is surprising is the staff composition: Nearly half are women. Recent polls from a variety of organizations indicate that women more typically account for 20% to 30% of an Internet team.

Nor does this have to be a young person's job — although youth may provide the resiliency to survive the hours an Internet job often demands. At Virtual Vineyards, most people are in their 30s and 40s. "We hire people with gray hair," Olson says. "I like experienced people." Of course, experience is a relative term when describing the technical expertise at play on this field. How could it be otherwise when Java is only 2 years old?

Which raises another key issue: Time is at a definite premium when dealing with the Internet. Things don't just change, they zoom into another dimension. That translates into a workday tailor-made for type A personalities. "My

programmers still do heads-down programming, but they also have to be flexible when priorities change — to switch gears and do new things as they arise, then go back to what they were working on before. In some ways, these jobs are more stressful than typical programming," says Susan Goeldner, manager of Internet technologies at Federal Express Corp. in Memphis, Tenn.

"That faster pace means we all have to work at a higher level, we have to be willing to put in more time evaluating technology, reading magazines, attending conferences, talking to vendors and surfing the Web to see what's new on other sites," she says. "We're always working with cutting-edge technology."

That's not the case at Snap-on Tools or Avery, among others. And that can be a major source of frustration for peo-

> "The Internet typically creates an entrepreneurial,
> or start-up, spirit even in the most established companies."
>
> — Marc Rettig,
> Digital Knowledge Assets LLC

ple drawn to this field. "We are designing our sites for the lowest common denominator, so we don't always get to use the sexiest tool," Avery's Hatch says. "We only recently upgraded our design criteria to a 14.4 modem, and we did not deploy frames until America Online could handle them. That does tend to make people frustrated, because they're in the hottest section of IT but they don't get to use the hottest tools."

What they do get to use is their communication skills — regardless of company. Frankly, there isn't an Internet effort out there that doesn't require teamwork. That's what happens, after all, when marketing, sales, customer service and support — just about any division you can think of — wants to put its message over the company's TCP lines.

"When I look for people, I go through a fairly intensive process, from technical tests to the interview to having them meet with the others to see if they can get along," FedEx's Goeldner says. "We have higher visibility in the company than a traditional programming group ever got. Everyone sees what we do. I'm more of a peer now, and so is the rest of my team. That's why communication skills are crucial."

So ask yourself if you like that kind of attention; if so, it just might behoove you to explore the sorts of careers the Internet has to offer.

Rochelle Garner is a freelance writer based in San Carlos, Calif.

Illustration: J.W. Stewart

Illustration: Daniel Baxter

By Linda Wilson

Know it all

The Internet is constantly growing, and so is the bank of skills you need to invest in

Jason Hoch has been a project manager for TriNet Services, Inc. since mid-August. Already, he's decided to add to his skill set.

At his previous job as a webmaster for MCNC in Research Triangle Park, N.C., Hoch handled all aspects of Web site development and administration. He learned HTML, as well as the basics of Unix administration and Java. He also honed skills in graphics design and marketing, which he had developed in earlier jobs, and rounded it out with people and organizational skills.

In his new job as a project manager, he needs all of those skills and then some. "I need to know a lot about a lot of things," Hoch says. Those additional skills include the basics of database integration and Web server administration. Hoch needs to know enough about each area to coordinate others' work and, when things are really hectic, to pitch in.

Hoch's emerging career illustrates that, as the Internet grows up, so, too, do the skills you need to carve out a career in this arena.

Growing sophistication

Internet/intranet work has evolved from developing content and code for simple, HTML-based informational pages to sophisticated, interactive, Web-based applications. And as companies put mission-critical applications on Web servers, administration and network-engineering skills are becoming as important as skills associated with application programming and site development.

As a result, a number of distinct skill sets have emerged. "It varies from the very in-depth, technical knowledge of how a router works and how to program one to the graphical aspects of designing a Web site," says Don Heath, president of the Internet Society in Reston, Va.

The rapidly evolving Internet skill sets can be divided into four areas: creative, programming, project management and network and systems administration.

Take TriNet Services, where Hoch works. The 35-employee firm, based in Raleigh, N.C., provides a range of Internet/intranet services. Project managers, such as Hoch, coordinate the work of specialists in graphics, multimedia, programming and Web site development.

Meanwhile, those working in graphics and multimedia are artists familiar with applicable theory, techniques and products, such as Shockwave and Director from Macromedia, Inc. and Photoshop from Adobe Systems, Inc., according to Cameron McCaskill, vice president of operations at TriNet.

Employees working in the other areas possess technical skills. Web developers typically have experience with HTML; some also have knowledge of Java and CGI scripts. Employees in programming concentrate on either development or database administration, McCaskill says.

Developers usually have experience in a number of languages — Perl, C++, Java — and operating systems — Unix or NT. TriNet also looks for people with experience in database packages, such as Oracle from Oracle Corp. or groupware, such as Lotus Notes.

Networking savvy

Although many corporate Web projects focus on the development of sites and applications, networking is becoming important as well.

"You will find a whole new specialty emerging to support corporate Internet sites as they move from the prototype phase to mission-critical applications," says Mark Bonham, vice president of marketing for Exodus Communications, Inc. in Santa Clara, Calif., an Internet-site and network-infrastructure management firm. These highly skilled professionals "will be faced with the same challenges [network reliability and performance] that the IT community has faced in client/server," he says.

Bonham says Exodus, which has 250 employees, usually hires people with experience in systems administration, network-routing technology or database management and replication.

Exodus then cross-trains employees so that they have at least a basic understanding of all three areas. It also trains employees in networking skills unique to the Internet, such as security issues.

Basic Skills

To get into Internet work, you need at least some of the skills in one of these areas:

Creative: Graphics and multimedia techniques and tools, such as Photoshop from Adobe Systems, Inc. and Shockwave and Director from Macromedia, Inc.

Web Development: HTML, Java, Java scripts, CGI scripts

Applications Programming: Unix, Windows NT, Perl, C, C++, Java, HTML, CGI scripts, relational databases

Network Engineering: Unix or NT administration, routers (particularly Cisco Systems, Inc.), network monitoring and performance measurement, security and protocols, including TCP/IP, HTTP, FTP

Project Management: A cross section of skills from all areas, plus marketing and business savvy, communication, organization and multitasking skills

"We look for people who come from a structured background — who have the discipline to do planning and documentation," says Charles Larkin, director of special operations. "We look for people who have experience managing [the network] as a business — who understand down time and the impact to customers."

Larkin exemplifies the Internet engineer he speaks of. He started at Exodus as director of special operations in July and has an extensive background in networking. Before joining Exodus, Larkin was senior manager of global network services for Ingram Micro, Inc. in Santa Ana, Calif. He began his career as a computer operator 15 years ago.

Broad knowledge base

While Internet jobs, such as Larkin's, are becoming more specialized, the skill sets typically are broader than those in similar positions in the client/server or mainframe arenas.

Because the area is so new and rapidly evolving, people find it helpful to be cross-trained in a number of skills so they can pitch in where needed during crunch times.

For example, TriNet encourages programmers to know more than one language or to also know how to integrate databases with Web sites. It encourages artists to know both graphics and multimedia. And it encourages HTML coders to learn an object-oriented language, McCaskill says.

Sam Hanks, art director and a cofounder of Nascent Technologies, Inc., a Web site development firm in Reston, Va., is another example of today's Internet engineer. Not only is he an expert in graphics and marketing, but he also knows HTML, CGI and Java scripts.

Many pundits believe that, in addition to broadly trained technologists, there will always be a market for the services of the generalist, who works either as a self-employed contractor or as a project manager for an organization.

"They are the expert generalists, which I haven't seen before," says Andrew Craft, chief executive officer of the Internet Developers Association/International Society of Internet Professionals. "Generalists will spend time with the trade journals, they know the technical stuff and the marketing stuff."

Indeed, Craft urges anyone involved in this rapidly evolving market to pick up as many skills in as many areas as they can. "No Internet professional can do the job effectively unless, at some level, they are a generalist," he says.

Linda Wilson is a freelance writer based in Glen Ellyn, Ill.

cover story   work life   skills   salary   training

By William P. Densmore

Secret agents

The Internet calls for homegrown security experts

Bill Hancock remembers the bank he visited to do an audit. With his collaborator, he was able to pierce the electronic funds transfer system from an external node with no password.

"This was a bank!" says Hancock, executive vice president and chief technology officer of Network-1, a network security consulting and training company in New York.

Corporate networks and Internet sites, bent on opening up their wares and their proprietary information to insiders and outsiders, are fueling the greatest demand ever for computer network risk and security experts. The result: escalating salaries and a tight supply.

Companies recognize this need. In a September survey of 4,200 CIOs by Ernst & Young LLP, 78% of U.S. companies say they have hired full-time information security personnel, up from about 65% a year earlier, according to Scott D. Ramsay, a security practice leader for the Big Six accounting firm. He says for the first time, the survey found management supported hiring security personnel.

The bad news for information systems managers: With strong demand and few applications, don't expect to be able to hire just the right person, with no training required. Your best candidates may be homegrown, and you may find outsourcing some aspects of security makes sense.

"We are having trouble filling some of the openings because there aren't enough people with the kind of talents

Photograph: Dan Bryant

Network-1's Bill Hancock says a lot of training is a "being there" experience

we need," says A. Padgett Peterson, an information security engineer at Lockheed Martin Corp. in Orlando, Fla. Lockheed has a 14-person corporate computer security operation nationwide and does security consulting as well as handling its own networks.

With a shortage of professionals and a big demand for their services, on-the-job training is a given.

Of 5,500 computer science Ph.D.s in the U.S. last year, only 16 completed dissertations on security topics, Eugene H. Spafford, head of Purdue University's computer security degree program, told a U.S. congressional subcommittee earlier this year.

"I work with many of the more popular protocols and security issues first hand, and there's no training for that," says Hancock. "It's a 'being there' experience."

"The training grounds are not keeping up [with demand]," agrees Bruce Murphy, national practice leader for resource protection at Coopers & Lybrand LLP in New York City. "So within enterprises, it has to be trial by fire. There is never a lack for a technology challenge because security is becoming so broad. It is a piece of all technologies."

As a result, computer security experts are among the most sought-after engineers. While their pay is currently about the same as in other specialties, their stature and pay are both rising quickly.

"Pay has probably gone up anywhere from 25% to 50% in the last three years," Murphy says. "Really experienced, knowledgeable individuals who deal with cryptography, Internet technology or networking or electronic commerce are easily into the six figures. And if they are really knowledgeable, they can be [paid] significantly beyond that."

Salaries for security engineers might be in the $60,000 range, and security managers may be receiving $80,000 or higher, according to Tim Mather, security manager at VeriSign, Inc., a Mountain View, Calif., cryptography vendor. One network security headhunting firm says security professionals two years out of college with strong Unix and NT skills can command salaries of $55,000 or more per year.

Average salaries for systems administrators and network security (SANS) professionals climbed nearly 8% from 1995 to 1996, according to a survey of more than 1,000 respondents conducted by the Bethesda, Md.-based SANS Institute. In 1996, the average salary for systems administrators was $54,067, according to SANS.

New-found stature

This new-found stature for security professionals results from the Internet's position as the medium of choice for business communication. In this new environment, the network is not secure, so enterprises must retool their systems, software, personnel and procedures to make sure they know who has access to corporate secrets, and from where.

Because access is sought from so many places, and by so many people, security has become enormously more complicated. At the same time, users want more convenience, such as single passwords for multiple-site access. As the number of security technology vendors balloons, so does the task of evaluating all those options.

"People think of it as repulsive or disenabling technology," says Daniel E. Geer Jr., a senior security and cryptography expert at CertCo LLC of New York, a spin-off of Bankers Trust New York Co. "But to be frank, the people who use security and cryptog-

> "We are having trouble filling some of the openings because there aren't enough people with the kind of talents we need."
>
> — A. Padgett Peterson, Lockheed Martin Corp.

need not apply

Risky Responsibility

As computer network security gains respect as a formal occupation, the scope of the assignment has begun to broaden to include the following:

- Policies and procedures
- System authorization and access control
- Operating system environmental security
- Information system security management
- Risk assessment
- Communications security
- Physical and environmental security
- Security awareness and training
- Disaster and contingency planning
- Application security

Source: The International Information Systems Security Certification Consortium

raphy best are people who use it to do things they couldn't otherwise do." CertCo is working with banks and the credit card industry on an array of products, some of which it has not yet announced.

Getting there

Although finding a job in network security may be easy, preparing for one is not. Career paths are murky for would-be network computer security managers. That's because there's no established definition of network security.

Typically, security managers have worked as network managers, Unix sys-

tem administrators, routing administrators or mathematicians and gravitated to computer programming. In their jobs, they have been forced to deal with risk-reduction and security issues. They may have a background in banking or auditing. They should be, as one expert said, "professionally, well-controlled paranoid." Most important, they should be obsessed with keeping up-to-date on the latest technology and protocols.

"You can get guys coming straight out of college or even some skilled folks right out of high school who have some good technical skills," says David M. Kennedy, research director for the National Computer Security Association, a 4,000-member professional association based in Carlisle, Pa. "But they do not have the business experience or the ability to understand that business isn't doing a Web server, it is doing whatever that Web server will do for the business. They have to understand that technology supports the solution, and security makes the technology safe."

Also complicating the question of how to prepare for a network security

career is lack of a clear job definition.

Among the functions that should be thought of as part of security are perimeter access controls, internal audit functions and user authentication. Backing up data is not traditionally thought of as a security cost, but it is surely a portion of the "risk-reduction" efforts that an enterprise security expert should be expected to manage. So, too, are aspects of network management, because the way a network is configured and used can have a profound effect on its security.

So a background in as many of these areas as possible — as well as solid knowledge of Unix and/or NT— is valuable. But more important than experience may be attitude, they add.

The best candidates not only understand how systems work but also can envision how a hacker would try to cor-

rupt them, and then design countermeasures. And they know how to evaluate real-world business risks, such as a threat to a corporate reputation from a loss that may seem trivial in dollars and cents. This gives them the insight to lead subordinates as well as to match the security software and systems to the scope and nature of the risks.

Thus the ideal security professional combines skills-at-risk assessment and people management. "I've met people with psychology degrees who are better at this stuff than people with computer science degrees," says Network-1's Hancock, "If you've got a very good senior manager who understands enough about the problem to get the right people, you will do very well." ◇

William P. Densmore is a freelance writer based in Williamstown, Mass.

Hiring qualified computer security staffers is not an easy task for Lockheed Martin's A. Padgett Peterson

Photograph: Red Morgan

Cryptography: Is it for you?

Consultants, recruiters and information systems managers agree that deep knowledge of cryptography isn't a prerequisite for a computer security career. That's because the security software on the market now is increasingly user-friendly and applies cryptographic algorithms in the background.

But for the Internet job searcher with the right personality and, typically, a background in pure mathematics,

there is an opportunity to join an elite corps of programmers who develop the cryptographic "engines" underlying computer network security.

Cryptography is the science of coding information transmitted between two points so no one other than the sender or the intended recipient can find out the form of information or its contents. Its principal consumer used to be the National Security Agency, but public-key cryptography has crept into Internet consumer and commerce

transactions. And as commercial applications outstrip government uses, the demand for experts is growing.

Among the U.S. institutions fighting to meet the demand are Purdue University, the University of Wisconsin at Milwaukee, Princeton University, Ohio State University, Texas A&M University and Washington University in St. Louis. But the prevailing view of the experts is that crypto-wizards are born, not trained — or at least they take an interest in the science of cryptography in their formative years, well before college.

Cryptographic experts say their

brethren enjoy taking things apart and assembling them in novel ways. They regale in an atmosphere in which nothing can be trusted until it can be independently confirmed with the original source.

"The training grounds are not keeping up [with demand]," says Bruce L. Murphy, national practice leader for resource protection at Coopers & Lybrand LLP in New York City. "So within enterprises, it has to be trial-by-fire. There is never a lack for a technology challenge because security is becoming so broad. It is a piece of all technologies."

—*William P. Densmore*

High stakes

By Julia King

Photo illustration: Michael Kressley

*Salaries and bonuses for Web professionals hinge on skills, experience and commitment —
of both the employee and the employer*

As recently as 1995, just about anyone with even a passing familiarity with the World Wide Web and HTML could respond to a help-wanted ad and reasonably expect to secure an Internet-related position.

Two years later, the stakes are a lot higher. Now, companies want Web programmers with experience in C, C++, Visual Basic, Java and various scripting languages. Networking and infrastructure skills, including Unix and TCP/IP expertise, are also highly sought after these days. (See box, next page.)

But companies are also more willing than ever to pay top dollar for such talent. Depending on location, a Web programmer with the desired skills can earn an average of $52,479 a year (in St. Louis) to $75,417 (in New York City), according to a 1997 Internet salary survey by Stamford, Conn.-based Meta Group, Inc.

Moreover, Meta Group's research indicates that some of the greatest IS salary increases are going to object-oriented programmers working on Web projects. These professionals are earning between 20% and 35% more than regular programmers. Web-oriented professionals with Java experience are getting salary premiums of 20%.

On the networking side, Web engineers nationwide are earning an average annual salary of $62,800, according to another recent Internet compensation survey, by New York-based Buck Consultants.

Yet geography and job titles tell only a part of the Internet salary story. Other factors, including how a company uses the Internet and whether the company is generating revenue, also play a role in how much a webmaster, Web developer or other Internet staffer is compensated for his work.

"At companies selling on the Web, and where Web activities are driven by the CEO's office, I've seen special bonuses of between 20% to 30% above base pay," for Internet staff, says David Foote, managing partner at Cromwell Partners LLC, a consulting firm in Stamford, Conn.

Also common are 5% to 10% bonuses for Internet professionals who commit to specific projects for anywhere from 12 to 24 months.

Overall, the rule of thumb is "the more important the Web is to the business, the more you'll see special pay plans," Foote says. Companies with Internet-based electronic-commerce projects, for example, may pay higher salaries than those in which Internet projects are limited to internal Web sites for use by employees.

More skills, more money

Another factor affecting salaries is the combination of business and technical skills a professional brings to the job. Most Web development teams, especially those working on electronic-commerce projects and consumer-oriented retail sites, require a unique mix of communications, marketing and technical skills, which drive up the market value of professionals with broad-based expertise.

Consider the case of Unity Stoakes, 23, an Internet communications specialist at Middleberg Interactive, the Internet and new media arm of Middleberg & Associates, a New York City public relations firm.

Stoakes knows HTML as well as how to design and program Web pages. But his primary job is advising clients how to incorporate the Internet into their public relations strategies. He also evaluates the Web sites of his clients' competitors.

A year and a half ago, when he joined Middleberg with a bachelor's degree in communications from Boston University, his Internet skills "immediately set me apart from the pack" of other job candidates, Stoakes says. The same skills also helped boost his salary by 30% above what he would have been paid without them, he says.

Still, Stoakes doesn't consider himself a techie. "I consider myself more of a public relations person with a very strong grasp of the technology. I'm not a high-end coder, yet I understand and have a background in that area," he says.

Chris Pizey, 34, moved to his current job as webmaster at Andrews McMeel Universal Press Syndicate, a publishing business in Kansas City, Mo., from an information systems

manager's position at the same company. What motivated him to make the move was not more money. In fact, he's making the same salary that he was as an IS manager. Instead, Pizey says, he glimpsed the future of his company in the Internet, and he wanted to be a part of it.

Higher visibility

Pizey also went from a pure services role in IS to a much more visible position in a department that should eventually produce revenue for the company. Andrews McMeel's Internet business includes delivering syndicated comic strips branded for 80 different online publications, including *The Washington Post* and other large, metropolitan newspapers. The company also sells comic books and other products on the Web.

"My job gets into the nuts and bolts, from running Web servers to actually scheduling the development of new products and features," Pizey says. Now in the job for two years, he says he's earning the equivalent of what he would have earned had he

stayed on as an IS manager. But once the company's Internet projects begin to turn a profit, he expects that will change for the better.

"I see a lot of traditional IS people who would like to make a switch to Internet-related jobs, but I think it's hard when you've been doing Cobol programming for a while, and you've also got a family and kids, and you're already working 50 hours a week doing what you're doing," he says.

"It's a whole new set of tools to learn, and it's hard to make that leap without a lot of incentive," he says.

Consequently, Pizey says, many of the Web developers in his department tend to be younger. He also sees more men than women.

"There are a lot of kids coming out of college who have been on the Internet and know what it's all about," he says. "They've been involved in developing Web sites in college, and they come cheaper, too, which is a big plus, because a lot of projects like ours aren't making money yet."◇

Julia King is a Computerworld senior editor, IS careers, social issues.

"I consider myself more of a public relations person with a very strong grasp of the technology."

— Unity Stoakes,
Middleberg Interactive

What's in a Name?

Web site engineer:
The head technical person for the Web site. Maintains the link between the Internet provider and the Web site. May maintain connectivity between Internet and LAN/WAN sites within the company. Keeps abreast of new technologies. May create and/or maintain the mechanism connecting the Internet and the company's E-mail system. Ensures that a fire-wall mechanism is in place to protect internal LAN/WAN sites through a combination of hardware and software. May also perform the role of security administrator.

Webmaster:
An increasingly amorphous job title, often encompassing everything from a beginning programmer to a management-level marketing professional, depending on a company's culture and structure. At Meta Group, the title of webmaster is evolving into a more senior-level position, with the person in the job responsible for managing the evolution and well-being of all Web work, as well as the more traditional HTML and technical work. A sort of overall Web project manager.

Web site programmer:
Responsible for program design, coding, testing, debugging and documentation. Devises or modifies procedures to solve complex problems considering equipment, capacity and limitations. Has full technical knowledge in all areas of application software used to develop and maintain the Web site. Works closely with engineers and artists to ensure that the Web site is developed according to specifications.

What's in a Paycheck?

Web engineer AVERAGE SALARY:		Webmaster AVERAGE SALARY:		Web developer/programmer AVERAGE SALARY:	
New York City:	$81,623	New York City:	$86,319	New York City:	$75,417
Atlanta:	$67,078	Atlanta:	$77,622	Atlanta:	$63,273
Chicago:	$61,909	Chicago:	$72,176	Chicago:	$65,191
St. Louis:	$57,942	St. Louis:	$58,540	St. Louis:	$52,479
Boston:	$72,968	Boston:	$72,420	Boston:	$69,238
San Francisco:	$75,613	San Francisco:	$81,279	San Francisco:	$71,014

Source: Buck Consultants, New York, and Meta Group, Inc., Stamford, Conn.

Choices abound as Web certification gains popularity among employers

S o you've decided to get more involved with the Internet. You've got a lot of IS skills, but are they right for the 'net? If you're looking for training, you'll most likely find yourself confronted with a bewildering array of choices from vendors, universities, start-ups and traditional third-party trainers.

Training comes in a variety of forms, from programs you can download off the Internet to certification programs offered by various organizations. All have advantages and disadvantages, depending on your needs.

A key development in the training market during the past year has been a shift in emphasis from ad hoc training to certification programs. Certification programs are usually designed to prove

Training
mind-set

By Steve Alexander

programs are usually designed to prove to employers that graduates have certain key Internet skills.

However, despite the growing popularity of these programs, there are still no standards or benchmarks among them, which makes it difficult for employers to gauge a job candidate's expertise.

"There were relatively few [certification] courses a year ago, and they needed more depth and breadth," says Alan Salisbury, president of the Reston, Va., operating unit of training firm Learning Tree International.

That has changed in the last year, reflecting the rapid changes on the Internet itself.

Behind it all lies an exploding Internet market in which demand for skilled people far exceeds supply.

"These [graduates] are getting swallowed up faster than we can produce them," says Richard Schatzberg, director of development and marketing at the New Jersey Institute of Technology's division of continuing professional education in Newark. Demand for Internet skills is so great that his state-funded university is entering the national training market rather than restricting itself to New Jersey.

James Lawler, vice president of training technologies at Merrill Lynch & Co. in Princeton, N.J., says corporations often turn to outside trainers for Web expertise. The difficulty is finding the firms that have the best instructors for the more complex Web topics.

"On the more elementary topics, there are more qualified teachers," Lawler says. "But when you move on to languages, tools and utilities used on the Web, you find training vendors have less quality to offer because there are fewer consultants with these skills who are available to teach."

Among the difficulties facing those seeking Internet training is the disagreement within the Web professions about whether certification makes sense. After all, Web technologies are changing fast, and there is little agreement on the definition of a webmaster's responsibilities.

"I like certification programs, because without them, you never know what you're getting," says Daniel Meeks, a certified webmaster and a vice president at the Bank of America in Chicago. He also operates an intranet at the bank.

Jayne Mason, executive director of the Webmasters' Guild, a trade association based in Cambridge, Mass., disagrees. "This confusion about the definition for webmaster, plus the many programs that have arisen throughout the country for webmaster certification, have created a massive problem: Certification from one program is not the same as certification from another."

Plenty of choices

Despite a lack of agreement on what a webmaster is, certification programs abound, says Brandon Hall, editor of the "Multimedia & Internet Training Newsletter" in Sunnyvale, Calif. "Entrepreneurial companies are going to create certification courses. They aren't going to wait until everyone agrees on what the whole curriculum should be."
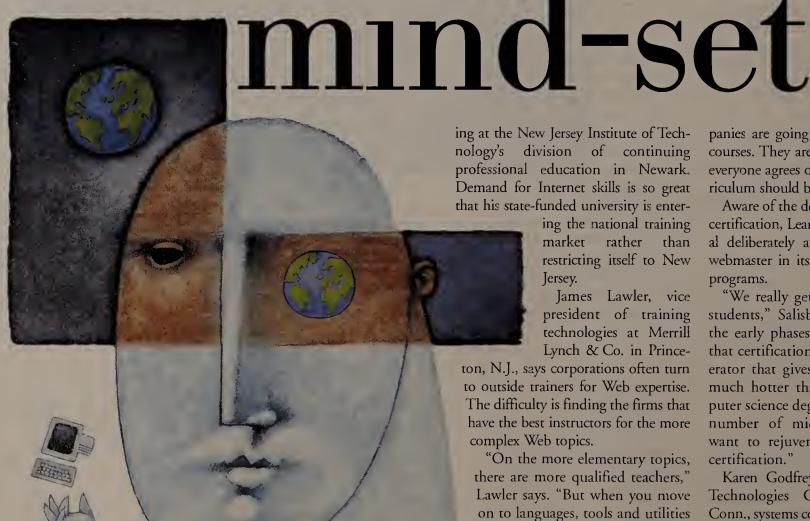
Aware of the debate about webmaster certification, Learning Tree International deliberately avoids using the term webmaster in its third-party certificate programs.

"We really get quite a spectrum of students," Salisbury says. "People in the early phases of their careers find that certification is a real career-accelerator that gives them a ticket that's much hotter than just a plain computer science degree. We also get a fair number of midcareer people who want to rejuvenate their skills with certification."

Karen Godfrey, a partner at KMA Technologies Group, a Stamford, Conn., systems consulting firm, says her intranet/Internet certification gave her credibility with customers. "I'm not suggesting you walk away from certification classes an expert, but they give you a foundation," she says.

Different strokes

One of the most confusing aspects of searching for a certification program is finding the *right* program. With so many different meanings for titles such as webmaster, it's often hard to sift through the various programs to find the one that's right for you.

Net Guru Technologies, Inc., a third-party training firm in Oak Brook, Ill., tries to deal with the webmaster debate by offering several different types of webmaster certification for different Web-related jobs.

And keep in mind that not all Internet/intranet courses are designed specifically for IT. Novell, Inc.'s Internet and intranet courses, for example, are designed for a broader audience that includes people from human resources, finance, marketing and public relations, says David Marler, manager of product and program marketing for Novell Education at the Orem, Utah, company.

Online training

You can also get Internet training from the source itself — the Internet. DigitalThink, Inc., a year-old San Francisco Internet training firm, delivers interactive lessons exclusively via the World Wide Web. The company's courses, some generic and some vendor-specific, are designed for IT people who are systems administrators and programmers as well as Web professionals such as graphic designers. DigitalThink doesn't offer its own certification programs but says its courses can be used to prepare for certifications offered by other companies.

Web training has a personal side, too. Students can exchange messages in a DigitalThink chat room; a Java applet allows each student to see who else is logged on at the moment. Students also can leave messages for colleagues who are not logged on.

But Internet-based training isn't for everybody. Godfrey says she liked classroom training because she learned from the other students. "The other people in the class brought up issues in security and networking that I never would have thought of," she says.

It seems clear that rapidly expanding Web technologies have created an almost unprecedented bonanza for training firms.

"What we're now seeing is a 'training field of dreams,'" Salisbury says, referring to the plethora of training courses now available. "If we build the right course, they will come out and take it." ◇

Steve Alexander is a freelance writer based in Edina, Minn.

FYI Online

Check out these Web sites offering hands-on technical advice, tips, how-tos and tutorials on Web site development, security, electronic commerce, intranets and Java, Java, Java.

WEB SITE DEVELOPMENT

CNET's Builder.com
http://www.cnet.com/Content/Builder/?ntb.bldr
Keep up with new Web technologies and trends and get practical advice on using new products to build successful sites.

D.J. Quad's Ultimate HTML Site
http://www.quadzilla.com
Find out everything you wanted to know, but were afraid to ask, about HTML authoring and design, including tutorials, style guides, editors, standards, news, reference material, tips and tricks, technical papers and more.

HotWired
http://www.hotwired.com/frontdoor
Whether you're an old hand or a 'net novice, use this site, published by *Wired* magazine, to learn how to use Usenet newsgroups, get programming tips and step-by-step how-tos, brush up on HTML, find cool Web jobs and increase your awareness of the 'net.

The Official VRML Site
http://vrml.sgi.com/basics
Get the who, what, when, where and why on VRML at Silicon Graphics, Inc.'s site for this 3-D programming language. It provides case studies, programming tips and tricks, a gallery of images, white papers and other resources.

WebDeveloper.com
http://www.webdeveloper.com
Download software; get reviews, how-tos and Q&As; and participate in threaded discussions on security, browsers, HTML, Java and all things related to Web site development at this comprehensive resource.

The Web Developer's Virtual Library
http://www.stars.com
Learn about Web site design and authoring, including HTML, CGI, graphics, Java and JavaScript, as well as a range of other subjects, from hands-on articles and tutorials.

Webreference.com
http://www.webreference.com
Use the case studies, tutorials and how-to articles here to learn about a wide range of Web design and maintenance topics — from animation to security to extranets.

JAVA

Cafe au Lait
http://sunsite.unc.edu/javafaq
Bookmark this independent Java site, which is updated nearly every day, for FAQs, tutorials, course notes, code examples, news and more.

Developer.com
http://www.developer.com
Use this site to connect with the Java community. Get the latest Java news, staff picks for Java software, new applets, reviews and more for all Java-related technologies.

The Java Boutique
http://javaboutique.internet.com
Use this resource to add Java applets to your Web site. It contains more than 100 applets, with instructions for downloading and using them.

Java Report: The Independent Source for Java Development
http://www.sigs.com/jro
Get weekly news, in-depth how-to articles — including actual code for procedures described — tutorials, product reviews and information on new jobs.

JavaWorld Magazine
http://www.javaworld.com/javaworld
Check in here regularly for in-depth how-tos, code examples, comparative product reviews, Java news and more.

The Official Java Web Site
http://java.sun.com
Download the Java Development Kit, application programming interfaces (API), applets and other Java software; get FAQs, papers, training information and a solutions guide; and keep up with the latest news and events, direct from the source at Sun Microsystems, Inc.'s own Java site.

INTRANETS

Online Seminar: Building a Corporate Intranet
http://www.wordmark.com/sem_1a.html
Take this online seminar to learn how the full range of Web technologies can be used for enterprisewide intranet applications such as document distribution, interactive services, training, database access and others.

The Complete Intranet Resource: Intranet Forum
http://intrack.com/intranet
Participate in live discussions about intranets, see demos of working intranets, learn about applications you can use, get tips on setting intranet publishing policies, learn about extranets and fire walls, check job listings, find events and get FAQs, product information, white papers and case studies.

SECURITY

"An Analysis of Security Incidents on the Internet, 1989-1995"
http://www.cert.org/research/JHThesis/index.html
Use this dissertation by Carnegie Mellon University graduate student John D. Howard as a jumping-off point to discover what you need to know about Internet security. It provides insight into the causes of Internet security breaches by examining 4,299 incidents reported to the Computer Emergency Response Team (CERT) Coordination Center during a six-year period. It also recommends methods for improving security.

NOTE: *For more on Internet security, including warnings and advisories, conference information, training guides and other resources, check out the following sites:*

FIRST: Forum of Incident Response and Security Teams
http://www.first.org

CERT Coordination Center
http://www.cert.org

National Computer Security Association
http://www.ncsa.org

ELECTRONIC COMMERCE

Computerworld emmerce
http://www.computerworld.com/emmerce
A biweekly webzine for electronic-commerce strategists that offers career and organizational insights on the emerging electronic-commerce field.

"Digital Money Online: A Review of Some Existing Technologies"
http://www.intertrader.com/library/DigitalMoneyOnline/dmo/dmo.htm
Get up to speed on the various models for online transaction payments with this white paper by Dr. Andreas Schöter and Rachel Willmer.
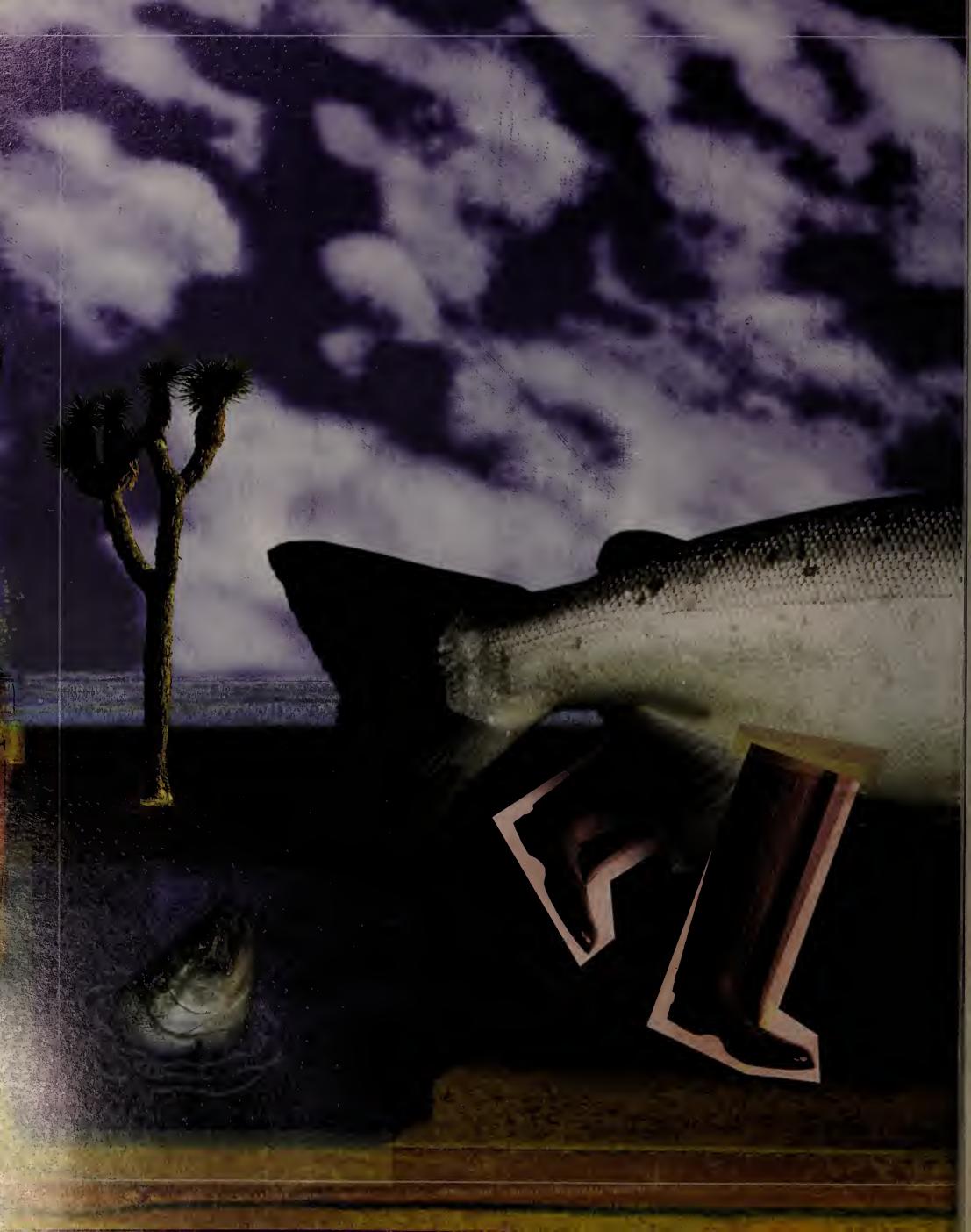
Java Commerce Home Page
http://www.javasoft.com:80/products/commerce
Surf here for the official lowdown on the Java Electronic Commerce Framework, the Java Commerce package, the Java Wallet and JavaCard. Download trial software and documentation and learn about the relevant APIs.

Compiled by Leslie Goff, a freelance writer based in New York City.

Software

Databases ♦ Development ♦ Operating Systems

Briefs

Oracle promises Lite

Oracle Corp. in Redwood Shores, Calif., this month plans to ship an upgrade of its Oracle Lite mobile database plus a personal version of its flagship Oracle8 software for application development uses. Oracle Lite 3.0, which went into beta testing in September, costs $195 per user and has new Java connectivity features and support for writing Java-based triggers and stored procedures.

Java project update

San Mateo, Calif.-based Netmosphere, Inc. is shipping ActionPlan 2.0, an upgrade of its Java-based collaboration software that has a new feature for tracking collections of projects. The new version can also show managers who is working on which projects and what other time commitments each person has. Pricing is $100,000 for 500 users.

Warehouse tools

VMark Software, Inc. in Westboro, Mass., this week plans to announce an upgrade of its DataStage data warehouse development tools with beefed-up debugging, data viewing and job sequencing capabilities. Optional modules support mainframe data access and the ability to incrementally update information that has changed. Prices start at $39,500 per server.

The next database frontier
How big an impact will the Web have on your database strategy?

Major 40%
Moderate 30%
None 14%
Minor 14%
Don't know 2%

Base: 60 Fortune 1,000 companies
Source: Forrester Research, Inc., Cambridge, Mass.

Recipe app makes food giant nimble

By Barb Cole-Gomolski

THIS WAS ONE case where too many cooks were spoiling the soup.

Whenever Hunt Wesson, Inc. wanted to tweak its tomato paste or add minimarshmallows to its hot chocolate mix, it wound up with a mound of paper.

That's because paper documents — which included recipes and manufacturing procedures — were manually routed around the company for approval every time a change was proposed.

It was hard to find information, difficult to make revisions and almost impossible to ensure that far-flung manufacturing sites had the most up-to-date specifications.

"Too many people were looking at the documents," said Dave Navarette, associate director of quality assurance at the Fullerton, Calif.-based food giant.

Though delays varied, it could take as long as 60 days to get a revised document into the system, Navarette said.

Faster turnaround was essential because Hunt Wesson wanted to change its products on a seasonal basis.

DOCUMENT MANAGEMENT

For example, tomato canneries run only in the summer, "so if you want to make changes to the [tomato] canning process,

you don't have a lot of time," said Hunt quality leader Brett Nickols.

Hunt, page 52

Corel bows to Microsoft file formats

By Gordon Mah Ung

DIME BANK CORP. probably epitomizes Corel Corp's. uphill battle with Microsoft Corp. for mind share in the corporate world.

Once nearly a pure WordPerfect shop, Uniondale, N.Y.-based Dime Bank slowly has found itself diluted with copies of Microsoft Office as it has acquired other companies and purchased laptops with copies of Office already installed.

Now with nearly a 50/50 split between the products, the help desk often is preoccupied answering calls from hapless users trying to open Word 97 files in WordPerfect.

"Before, it was a nonissue," said Fred Benedicto, manager of PC LAN technology. "Now we get calls: 'You know, Fred, there's something wrong with my E-mail' or 'There's garbage in my E-mail.' 'There's something wrong with my floppy drive.' "

Corel, page 52

Software finds savings in staples, paper clips

By Randy Weston

USERS ARE BEGINNING to focus their supply-chain management efforts on internal operational supplies.

Analysts estimate that operational supplies — office basics such as paper clips, copier ink and even business services such as couriers — account for one-third of all costs in a company.

Where the money goes
Breakdown of cost-center size at average corporations

Operations resources 33%
Product resources 25%
Labor 16%
Profit 13%
Taxes & depreciation 13%

Base: 125 cross-industry companies
Source: Grenada Research, Palo Alto, Calif.

"There is a growing recognition [among corporations] that indirect spending is a very significant portion of a company's cost," said Torry Byles, an analyst at Grenada Research in Palo Alto, Calif.

"To get a grip on it and manage it in a strategic manner is a great way to get to the bottom line in a company. These savings translate directly to increased profits," he said.

Software packages targeting this overlooked area are beginning to hit the market. On the list are such companies as Ariba Technologies, Inc. in Sunnyvale, Calif.; Elekom Corp. in Bellevue, Wash.; Commerce One, Inc. in Walnut Creek, Calif.; and Actra Corp., also in Sunnyvale.

Although most large enterprise resource planning (ERP) systems such as SAP AG's R/3 come with inventory management and procurement modules, Byles said they lack the depth and breadth of functionality that the niche systems contain.

Savings, page 52

SERVER APPS
Users await next step in NT access

By April Jacobs

SEVERAL USERS of Citrix Systems, Inc.'s WinFrame software — which provides multiuser access to applications on Windows NT servers — said they are eager to get their hands on the follow-on products Hydra and Picasso.

WinFrame users already have reaped the administrative benefits of server-based applications and are eager to get the added features of the new products, such as support for Unix and Macintosh platforms and audio/video capabilities.

Citrix and Microsoft Corp. recently released a beta version of software, code-named Hydra, that allows PCs, terminals and network computers to run PC applications on a Windows NT

NT access, page 52

Server-based administration solves problems more quickly.

Hunt streamlines production with recipe management app

Also, some revisions resulted in cost savings, so the company wanted to communicate them as quickly as possible to manufacturing facilities.

A document management system from PC Docs, Inc. in Burlington, Mass., that was put in place more than two years ago helped eliminate the paper

via client software. The document management system also lets workers search for documents, for example, by a particular ingredient.

Document approvals now take days instead of weeks, and Hunt Wesson can issue twice as many documents with the same number of staff.

HOW DOCUMENT MANAGEMENT HELPED HUNT

▮ Allows it to issue twice as many documents with the same staff

▮ Speeded up approval process for revised documents

▮ Allowed remote sites to request documents via E-mail

▮ Increased accuracy of documents

---

backlog and allowed employees to submit changes and manufacturing sites to request updates via electronic mail.

The software stores the recipes and manufacturing specifications in a central repository that is available to workers

"In the old days, we depended on somebody in corporate to send us documents. It might take a couple of days to get something," said John Woodard, quality assurance manager at Hunt's Davis, Calif., manufacturing facility.

"Now, we can send an E-mail to get the documents, and we have them in three minutes," he added.

Hundreds of workers can get documents by browsing an index and requesting copies via E-mail, but only about 20 have a document management client that allows them to search the actual document repository. That will change in the next few months, when Hunt Wesson implements Cyberdocs, an add-on product from PC Docs that lets workers use World Wide Web browsers to search the document repository.

Cyberdocs will give manufacturing sites the same search capabilities that PC Docs users in the home office have.

Nathaniel Palmer, an analyst at The Delphi Group, Inc. in Boston, said using document management software to track information about products can help companies respond to changing market conditions faster than their competitors. "The biggest hurdle to implementing a system like this is the political boundaries [you must cross]," he said. □

Users eye NT access

4.0 server [CW, Nov. 24].

Citrix also released a beta version of Picasso, a Hydra add-on that supports more server platforms and audio/video.

Scott Reid, manager of information technology at Winona, Minn.-based Fastenal Corp., said he plans to replace WinFrame with Hydra and Picasso so terminal users can access PC-based applications and retail systems.

The industrial-supply business has 630 retail outlets.

LESS TRAVEL

Reid said the new software will eliminate the need for troubleshooting visits to individual stores and will give Windows terminals the audio/video features commonly found in PCs.

"The only thing we're not happy about is the wait for the software, because we'd like to have it now," he said.

Commercial versions of Hydra and Picasso are expected to be out in the middle of next year. Pricing hasn't been set.

Analysts said the key user benefit of products such as WinFrame, Hydra and Picasso is that server-based administration allows for quicker problem resolution.

Ed Bianco, chief information officer at Lowell General Hospital in Lowell, Mass., is installing WinFrame so end users with aging PCs can access new Windows NT server-based applications.

Bianco said that should cut support costs, because problems can be resolved in a central location.

Benefits of Citrix Systems' multiuser server software

- Remote access to server-based applications

- Software administration from a server eliminates need for client-side administration

- Non-PC users can access PC-based applications

In addition, licensing server-based applications can be less expensive. Anne Turner, a PC and network specialist at the Tulsa City/County Library System in Oklahoma, said WinFrame allows 22 library branches to access databases that are updated monthly from a central location.

That setup allows the library to purchase a single copy of the application software to be shared instead of purchasing one for each branch. □

Corel bows to Microsoft formats

Most of the problems eventually lead back to the issue of sharing files between the two products.

That is a concern that officials at Ottawa-based Corel said they recognize and are trying to address with the release of new filters for the company's WordPerfect Suite 8.

The filters allow users to open, edit and save format-rich Word 97 and Excel 97 files.

The filters signal a new phase at Corel as it fights Microsoft in what some call a losing battle for corporate America's desktops.

"We want to move toward a strong co-existence with the Microsoft folks," said Corel's new vice president of sales, Don Sylvester. He was recruited in August from PC maker Dell Computer Corp. in Round Rock, Texas, to help Corel lure large enterprise customers.

"Microsoft is not the competi-

> Corel officials said the company will continue to produce WordPerfect upgrades while it works on a Java version of the suite, due next year. Earlier this year, Corel aborted an attempt to rewrite the entire WordPerfect suite in Java.

tor — they're the environment. We're really comfortable that our customers want to live in that environment. It is what it is. Let's make the best of it," he said.

Bruce Johnson, director of information services at the law firm of Robinson, Silverman Pearce Aronsohn & Berman in New York, said compatibility will benefit both.

"For Corel to say they're going to make their product live in a Microsoft world or ease the transition is a good business de-

cision for them, and in turn it helps me," Johnson said.

He is in the midst of migrating 300 users from WordPerfect for DOS to Windows 95 and WordPerfect 8.

Benedicto said compatibility will address some of his problems with supporting his end users, but he is still getting pressure to standardize on Microsoft.

The company probably would have already switched had it not estimated the cost at nearly $1 million.

"Functionally, they're equivalent. It's a toss-up. It has nothing to do with one being better than the other," Benedicto said. But he said he has doubts about Corel's future in supporting WordPerfect in what looks to be an increasingly Microsoft-centric market and worries about having to install more filters if Microsoft shifts its file formats again. □

Software finds savings

tain. Thus many of the ERP vendors are partnering with the niche players.

These third-party systems were designed to give corporate procurement departments central control over buying, which allows them to cut deals for volume discounts with just a few suppliers.

NO BUYING POWER

Byles said many companies let individual departments buy office supplies or other commodities, a process that doesn't allow a company to gain volume discounts.

Octel Communications Corp., a Milpitas, Calif.-based subsidiary of Lucent Technologies, Inc., is implementing Ariba's operational supply management system.

Lars Rabbe, chief information officer at Octel, said the maker of voice messaging systems ex-

pects a high return on investment from the Ariba system. It will save time for staff members in the purchasing department and can be tied to online purchasing catalogs that end users can flip through and order from directly, Rabbe said.

"You can cut the buyer completely out of the picture," he said. "You don't want to have the buyer handle all these insignificant items. What you want is a system that tells you what you can buy and then keeps track of it."

But Byles warned that those systems were designed specifically for large companies, ones that sell at least $30 million in goods each year.

Ariba officials said the company's software costs from $750,000 to several million dollars and was designed for companies with at least $500 million in annual sales. □

Servers & PCs

Large Systems ◆ Workstations ◆ Portable Computing

Briefs

EMASS for Alpha

EMASS, Inc. in Englewood, Colo., last week announced that its AMASS Storage Management Software supports Digital Equipment Corp.'s 64-bit, multiprocessor Alpha-Servers. The AlphaServer is being used for applications such as data warehousing that require high storage bandwidth. The AMASS software will let those servers quickly read and write files stored in robotic tape libraries, according to company officials.

Sun's storage encore

Sun Microsystems, Inc. has completed the purchase of Encore Computer Corp.'s storage business for $185 million. The move, begun earlier this year [CW, July 28], will help Palo Alto, Calif.-based Sun expand its disk-array platform support beyond Sun's Solaris. Encore's storage business included mainframe disk arrays and Datashare technology, which allows one box to support data from different Unix, mainframe and Windows NT servers.

Tips for application uptime

Do

▶ Develop minimum standards of availability for all corporate applications

▶ Incorporate availability into application design phase

Don't

▶ Assume technology will solve all availability needs

▶ Let your competitors pass you by with around-the-clock Web sites and extranets

Source: Gartner Group, Inc., Stamford, Conn.

Vendors put focus on desktop service

▶ *Enterprise players target Wintel users*

By Jaikumar Vijayan

SEEMS LIKE OLD times for some folks in the hardware business.

Because their wares have turned into commodities, enterprise vendors are falling back on years of integration expertise to provide new levels of service and differentiation in the Wintel space.

ENTERPRISE SERVICE

Unlike traditional PC support, which has seldom extended past hardware and life cycle services, the new services are being modeled and delivered along the lines of traditional mainframe-class service and support.

For corporate users, that trend could mean more enterprise-level support services, more packaged, market-specific, client/server applications and more custom-development capabilities built around Microsoft Corp. products.

"There isn't a heck of a lot of technical differentiation these days" on the hardware side, said Robert Dorin, an analyst at Aberdeen Group, Inc. in Boston. "So when you get into the enterprise level, what is going to make a critical difference is service and a vendor's relationship with the customer."

Leading the trend to provide such services are enterprise vendors such as Digital Equipment Corp., Hewlett-Packard Co., IBM, Data General Corp. and Unisys Corp. — all of which have recently invested time and money in shoring up their high-end PC service businesses.

This week, for instance, Blue

Vendors, page 56

SERVICE SECTOR

How hardware vendors are beefing up service:

▮ By offering more outsourcing/systems integration services

▮ By providing more customized software/application development support

▮ Through targeted enterprise-level service and support

PERIPHERALS

Digital camera gains among business users

By Nancy Dillon

AS HIGH-RESOLUTION digital cameras become less expensive, more users are snatching them up. And analysts say the biggest demand is coming from business users who want computerized photos for World Wide Web sites, engineering projects, real estate sales and police work.

Jim Verrall, MIS operations manager at Brandt Engineering Co. in Dallas, said he likes his Digital Mavica camera from Sony Electronics, Inc. because it uses standard computer 1.4M-byte floppy disks like film. Brandt is a mechanical contracting firm that uses cameras to

Camera, page 56

Intel bolsters chip position with deals

By April Jacobs

CHIP GIANT INTEL CORP. recently made a series of moves to guard its desktop dominance and reach deep into the network.

Some of the resulting technology is likely to bring users less expensive PCs and network connections, observers said.

"The core business for Intel has always been its microprocessors, but it's also likely that they can bring their expertise to other component areas as well," said Larry Garden, manager of technical operations at Brewers Retail, Inc. in Mississauga, Ontario.

Garden said Intel's broader focus is good, "as long as they don't give up quality for quantity in terms of their technology."

The Santa Clara, Calif., company's series of recent deals include the following:

▮ An agreement with Cisco Systems, Inc. in San Jose, Calif., to embed Intel chips in Cisco networking hubs.

▮ A pact with 3Dlabs, Inc., also in San Jose, that gives Intel graphics technology for its 64-bit Merced chip.

▮ An extension on a purchase offer for Chips and Technologies, Inc., a maker of PC and notebook computer chips based in Santa Clara, Calif. Intel's per-share offer, valued at more than $400 million, is good until Dec. 23. The deal still faces scrutiny from federal trade officials.

▮ Intel also recently settled an exchange of processor patent lawsuits with Digital Equipment Corp. Intel agreed to buy Digital's Alpha chip manufac-

Intel, page 56

INTEL'S PLANS

Technology	Estimated arrival
300-MHz server-class chips	January 1998
Graphics accelerator chips	1999 (in production)
64-bit processors (code-named Merced)	1999 (in production)

Feds aim supercomputer at nuclear waste

▶ *Application has commercial use*

By Tim Ouellette

THE FEDERAL GOVERNMENT is using IBM's SP RS/6000 system to help clean up one of the last vestiges of the Cold War — and give industry a leg up on its own environmental treatment efforts.

At last month's Supercomputing '97 conference in San Jose, Calif., the Pacific Northwest National Laboratory (PNNL) unveiled its efforts to clean up nuclear and chemical waste left over from 50 years of weapons production since World War II.

A 512-node SP RS/6000 will play a central part in managing the heavy-duty number-crunching needed to isolate the underground movement of weapons production waste. It will then find the best ways to clean up the damage. That includes modeling the millions of possible paths the waste takes through

Feds, page 56

The government is cleaning up waste from Cold War production of nuclear weapons

Desktops for the MIS director
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For more information about the Deskpro series, visit us at www.compaq.com/products/desktops/ or contact your local reseller.

COMPAQ

Feds take aim with IBM's SP

the local geological terrain.

The research could eventually be transferred to other commercial clean-up efforts in the chemical and petroleum industries, said Robert Eades, manager of computing at PNNL's Environmental Modeling Sciences Lab in Richland, Wash.

Researchers will use IBM's SP supercomputer to break down waste fluid movement patterns underground and then help separate nuclear, chemical and basic manufacturing waste.

A transfer such as this parallels IBM's efforts to push the SP beyond scientific research into more commercial, business-oriented situations.

But the task at hand is to clean up the Department of Energy's various weapons produc-

tion sites across the country, including the huge Hanford site located next door to PNNL.

Although an expensive supercomputer may seem extravagant for the job, it pales in comparison with the estimated $1 trillion it would take to clean up Hanford without the research.

The agency had to do something because "there weren't very high odds that the nation would spend $1 trillion to clean up a small corner of Washington state," Eades said.

Today, the cleanup task is more urgent than ever. Just last month, Hanford manager John Wagoner revealed that about 67 of the 177 underground tanks at the site are thought to be leaking — representing millions of gallons of plutonium waste.

Eades is taking proposals from various university and consortium groups that will run environmental research projects

on the SP over the next three years.

Researchers will use the SP to break down waste fluid movement patterns underground and then help separate nuclear, chemical and basic manufacturing waste. Separation will save money because nuclear waste costs more to store than other materials, and it would cost much more if the waste was grouped together.

PNNL chose the SP over other traditional supercomputers partly because of its strong massive parallel processing capabilities.

And this SP won't be the last. The Department of Energy wants to keep the cleanup effort going strong. So next spring, PNNL will add the latest SP from IBM to handle all software development for the main system, and it will upgrade again in 1999, Eades said.

"We want to keep our modeling code current, so we will make sure to keep the latest hardware onsite," Eades said. □

Digital camera gains ground

record the progression of its heating, air conditioning and plumbing projects.

"When you shoot with film, it might sit in your pocket for two days, and then professional processing usually takes another day. With the pictures instantly saved to a floppy disk, we can print them out or incorporate them into WordPerfect documents in five minutes," he said. Verrall has three digital cameras in use and two on order.

One million digital cameras were sold worldwide last year, and more than 2 million will be bought in 1997, said Ron Tussy, an analyst at International Data Corp. in Framingham, Mass. Tussy said the trend will continue through 2001 because the market is reaching a critical point where business users can get full-page, photographic-quality images from cameras priced between $500 and $1,000.

"Digital cameras are exploding on the corporate market, and 1998 will be an enormous year for business users," he said.

Tussy expects "megapixel" digital cameras — cameras capable of 1 million pixels per image — to be business favorites in 1998.

Examples of megapixel cameras in the corporate class include the $899 DC-210 from

Photos help Brandt Engineering identify the date that materials were delivered to a site

Rochester, N.Y.-based Eastman Kodak Co. and the $899 EPhoto from Belgium-based Agfa-Gevaert Group. Tussy said the prices on several megapixel cameras should drop to $500 by late next year.

For forensics technicians collecting evidence at crime scenes, digital camera preview screens can help prevent errors. "They give us the capability to

see if we have the exact images we need on the spot," said Warren Stewart, a forensics investigator at the Alabama Department of Forensics Science. Stewart said his group recently acquired its first digital cameras and expects to buy more.

Some users said although cost has been a deterrent, accelerated adoption also depends on other related advancements.

For example, Stewart said he will need a reliable encryption capability to ensure image authenticity in some cases. And Ira Serkes, a Berkeley, Calif.-based real estate agent at RE/Max Bay Area, Inc., said he is concerned about image output to his color printer.

"I'm certainly considering megapixel cameras. But I'm still waiting for a high-quality, high-speed color printer that won't bankrupt me," he said.

Serkes uses a video camcorder to capture full-color still shots of client properties for his Web site. He also creates black-and-white fliers with the still shots but said that with the higher resolution of a megapixel image, he would switch his fliers to full color. □

Vendors put focus on Wintel users

Bell, Pa.-based Unisys will announce a strategy aimed at delivering enterprise-class hardware and software components for enhancing Windows NT scalability and availability. This includes clustering software that can support up to 16 10-processor Unisys servers.

Packaged around the products will be a complete systems management product set; integration software to link legacy software with Windows NT; new NT-based electronic-commerce products; and a range of services, including architecture and planning, conversion and migration application development and installation.

MISSION-CRITICAL

That kind of service and support is crucial, especially when implementing mission-critical applications on Windows NT-based systems, said James Schwab, executive vice president of D&H Distributing Co. in Harrisburg, Pa.

"The more critical an application is, the more you rely on the

vendor for support," Schwab said.

D&H Distributing recently moved a crucial call-center application from an older, proprietary Unisys system to Windows NT, and it was Unisys' support that "provided an orderly transition to the new platform," he said.

Unisys' move highlights the kind of efforts other vendors have been making to leverage service and support as a key difference in the Wintel space.

Earlier this year, for instance, IBM and HP entered into service alliances with Microsoft under which both companies will deliver a wide range of integration and support services focused on BackOffice and Exchange.

Digital, which was the first major vendor to strike such a relationship with Microsoft, is building a team of 2,000 professionals to deliver a range of services. They include integration of Windows NT Server, Exchange Server, intranets and SQL Server in multivendor environments.

Even traditional PC vendors, such as Compaq Computer Corp., are getting into the services game. One of the primary reasons for Compaq's acquisition of Tandem Computers, Inc. was to gain access to Tandem's large enterprise-trained sales force [CW, June 30]. □

Intel bolsters chip position with deals

turing operations for $700 million. Digital will own design and development rights to Alpha, which Intel will manufacture. And Digital will port 64-bit Unix on the HP/Intel Merced architecture [CW, Nov. 3].

LOWER PRICES

Jane Wright, an analyst at Datapro, Inc. in Cambridge, Mass., said those developments could mean lower prices overall for users given Intel's historical practice to ship in volume and reduce prices.

"I think Intel is sort of a benign monopoly in that they try to drive prices down for the consumer," Wright said.

She also noted that the company's competitors haven't been able to encroach on its space,

despite offering similar product lines.

"If Intel did decide to ramp prices up, it would be tough to fill that volume and people would be forced to pay for that. But that doesn't seem to be Intel's way of doing business," Wright said.

A good example of the company's ability to branch into newer areas is its deal with Cisco.

Cisco last week chose Intel's 82555 Fast Ethernet transceiver for its Catalyst 5000 series of switches. The 82555 has been shipping since April, and the company said it expects to ship more than 5 million units this year.

Intel already provides Fast Ethernet silicon for network interface cards. □

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NEW PRODUCTS

HITACHI PC CORP. has announced Vision-Desk LCD, a desktop computer with a 13.3-in. LCD panel.

The San Jose, Calif., company said the system's flat-panel display provides 1,024 by 768 XGA resolution. It includes a 233-MHz Pentium processor, a 4.3G-byte hard drive and a 20-slot CD-ROM drive. An onboard 10/100 Base-T LAN adapter and a built-in 56K bit/sec. modem help users plug in to networks without having to adjust settings and drivers.

VisionDesk LCD costs $3,299.
Hitachi PC
(408) 321-5000
www.hitachipc.com

PANASONIC COMMUNICATIONS & SYSTEMS CO. has announced the P50 and the P70, two color monitors in the PanaSync/Pro Series.

The Secaucus, N.J., company said the 17-in. P70 was designed for graphics and engineering professionals. It features a 16-in. diagonal viewing area and 1,600 by 1,280 maximum resolution. The 15-in. P50 has a 14-in. viewing area and up to 1,280 by 1,024 resolution. On-screen control panels digitally adjust picture size, geometry and color.

The P70 costs $729, and the P50 costs $329.
Panasonic Communications & Systems
(201) 348-7000
www.panasonic.com

DATA GENERAL CORP. has announced the SCSI Series 100 and 2000, RAID arrays that have 18G-byte disk drives.

The Westboro, Mass., company said the SCSI Series 100 array has seven drive slots and holds up to 124G bytes of storage with 32M bytes of cache. The SCSI Series 2000 has 20 drive slots and holds up to 356G bytes of storage with 32M bytes of cache. The arrays support 0, 1, 3, 5 and 1/0 RAID configurations.

The Series 100 costs $36,620, and the Series 2000 costs $129,360.
Data General
(508) 366-8911
www.dg.com

ADVANCED DIGITAL INFORMATION CORP. has announced FastStor, a seven-tape, automated digital linear tape (DLT) storage device for backup at remote or several-server sites.

Officials at the Redmond, Wash., company said the device includes a single DLT drive and seven DLT cartridges in a compact enclosure that measures 7 by 9.5 by 22 inches. Designed to fit atop standard servers, it can offer a total capacity of 490G bytes. It is available with a DLT4000 or DLT7000 drive.

A DLT4000 unit costs $5,995.
Advanced Digital Information
(425) 881-8004
www.adic.com

SEAGATE TECHNOLOGY, INC. has announced the Elite 47, a Winchester disk drive capable of storing 47G bytes.

The Scotts Valley, Calif., company said the 5,400-rpm disk drive reads and writes at speeds up to 184M bit/sec. It has an UltraSCSI interface and is 5.25 inches high. The drive was designed for large central storage applications and professional video. It will allow 1T-byte arrays to be built using 22 Elite 47 drives.

The Elite 47 costs $2,995.
Seagate Technology
(408) 438-6550
www.seagate.com

SHERWOOD NETWORK DIVISION has announced the Sherwood Passport Network Computer.

The Hayward, Calif., company said the system was designed for multiuser environments such as point-of-sale. It can connect to an IBM, Microsoft Corp., Novell, Inc. or Unix host server over a network either through its built-in Ethernet port or its RS-232 serial port. Options include a 233-MHz Pentium processor, 256M bytes of RAM and 4M bytes of virtual RAM.

Pricing for a standard system with 16M bytes of RAM and 1M byte of virtual RAM is $800.
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Introduction by David Coursey

PARADIGM SHIFT, SHMARADIGM SHIFT.

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LEADING EDGE TECHNOLOGY WITHOUT THE ATTITUDE℠

Thinning the Cost of Ownership

By David Coursey

Thin-client computing is a new term that encompasses everything from a network computer (NC) running Java to tiny devices that either have embedded Java chips or run a specialized, real-time operating system.

Thin clients represent an approach for replacing terminals for legacy applications and for creating new opportunities where previously only PCs or even UNIX workstations might have been options. Users with no more than a browser interface can also derive big benefits. For an organization committing itself to Java, the thin-client option can be a big win.

Many would-be customers are taking a wait-and-see attitude; others see the benefits as a competitive advantage and are plunging ahead. Either way, the thin-client computing revolution is just beginning, with all the risks and rewards that it entails.

According to recent studies by market research firms, 30% of IS managers plan to buy thin clients in the next few years. For these managers, the big selling point is a dramatic reduction in total cost of ownership. With thin-client computing, when applications change, IS departments can simply upgrade a few servers instead of having to go around and upgrade each employee's PC.

It's also easier for IS departments to deal with a broken thin client on somebody's desk: They simply replace it, without having to move software from old machines to new. Plug it in and it works.

The ideal thin-client application will use a distributed computing model which allows a user to access time-sensitive information (data, documents) from anywhere. The Java desktop manages the user interface, supplying high user interactivity even when connected over slow 28.8Kb links. The computing takes place on the server.

Some IS managers are concerned over a possible increase in network traffic. How-

▼

For organizations committing themselves to Java, the thin-client option can be a big win.

Thin Clients Can Mean a Big Edge

4

▼

The faster you get information in usable form and the faster you can use it to make critical decisions, the greater your competitive edge will be.

Today, getting information is not the challenge. What's critical is the quality of that information, plus when and where you get it. How complete it is. How quickly you can use it to make the right decisions.

The faster you get information in usable form and the faster you can use it to make critical decisions, the greater your competitive edge will be. This is the basic premise on which Applix Inc. was founded. The Westboro, Mass., company is a pioneer in developing Java-based application solutions and now is driving all its solutions to the new paradigm of thin-client computing.

A thin client (or network computer) is a sealed, barebones computer with a processor, memory and display functions. Thin-client computing allows administrators to manage a network from a central location, eliminating the time and expense of troubleshooting every PC. They can also make software updates on the server, ensuring that all users have the same versions of the programs.

Lower cost of ownership is just one reason many enter-prises are switching from PCs to NCs. The thin-client computing framework also empowers users with web access to retrieve, analyze, interact and communicate with anyone, anywhere. And because IT departments no longer have to fight fires on desktops, they can spend more time being proactive in building business solutions.

The thin-client formula is a simple one:

Thin Client =
Strong Performance +
Lower Cost of Ownership +
Flexibility

Another benefit of thin clients is Java. Since Java applications reside on the server, the costs of deploying and maintaining them are low.

These advantages lead many observers to believe that the era of overloaded PCs is ending, and the era of network computing is beginning. (This is not to imply that the PC is dead, just that it may have reached its maturity.) Zona Research, a market research firm

in Redwood City, Calif., predicts that shipments of NCs will soar from 2 million in 1997 to more than 70 million in 2000.

Lawson Software, a provider of Web-deployable client/server applications, is also bullish on NCs. "[We] expect thin-client computing to explode," says Adam Thier, vice president of product marketing for the Minneapolis firm, whose applications, he notes, "have always been server-centric."

Thier is seeing his customers embrace server-centric environments. "Among our clients and prospects," he says, "we find HP and IBM particularly well-positioned because their backgrounds in mid-range systems give them an advantage in delivering zero-cost-of-administration systems."

Many companies have started to reap the benefits by adopting thin-client computing for business applications such as customer care, office automation, on-line analytical processing (OLAP) and real-time decision support.

Art of customer loyalty

Loyal customers are the backbone of every business. In many industries where products look alike and function similarly, customer service is the only differentiator.

Nothing frustrates a customer more than to call a vendor's main number, then get bounced from one representative to another as each one scurries around trying to be helpful. The reason this happens is because everyone in the organization has disparate pieces of information. No one has the big picture.

The move from standalone, departmentalized applications has led to a new business solution called customer interaction software (CIS). By placing the sales, marketing and service functions under one umbrella, CIS allows you to leverage the knowledge of multiple departments and put each employee who interacts with your customers in the loop. This way your staff can provide the type of service that appears seamless to customers. . . and keeps them coming back.

Quality customer service is important to Brite Voice Systems, a provider of telecommunications products. That is why the company's customer sup-

CIS Organizations

Marketing   Leads   Sales

Development   Service

Information Flow

6

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GO WITH THE FLOW: By putting the sales and service functions under one umbrella, CIS enables companies to leverage the knowledge of multiple departments and put every employee who interacts with customers in the loop.

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It's also easier for IS departments to deal with a broken thin client on somebody's desk: They simply replace it, without having to move software from old machines to new. Plug it in and it works.

port help desk combines a client/server architecture with a distributed intranet architecture that includes Java-enabled browsers on the client. This infrastructure became feasible once Robin Taylor, manager for Brite's Europe customer support operation, deployed Applix Service, a component of the Applix Enterprise CIS solution.

Because Brite was already running Applix Enterprise, "deploying the Java version was a non-issue," says Taylor. "We put the Java server on the network and didn't have to write any extra code." Engineers have easier access to Applix Service since they are not confined to their workstations. Technicians can log calls and perform diagnostics using the central support application from anywhere they find a web browser.

Taylor wanted to keep administrative costs down; thin-client computing helped him do that. "The big savings," he

says, "is centralizing database activity into one or two centers. Because Applix Enterprise is deployed from the intranet, it means minimal cost of ownership and zero maintenance. We expect to save $17,000 per location simply by eliminating the need for a traditional client/server infrastructure."

Taylor next plans to integrate the customer support applications with other functions. "Soon we'll have an ODBC link between the help desk and accounting system to view tables of customer details," he says.

CIS solutions based on thin clients are critical to resellers too. LANcomp, a systems integrator in Piscataway, N.J., makes Applix Service and a second Applix Enterprise module, Applix Helpdesk, part of its open business solutions "because of their robust functionality and because they're the only customer satisfaction solutions accessible via Java," says Dan DeVenio, vice president of sales and marketing.

When LANcomp makes an installation, it needs to track, manage, monitor and audit first calls and to create service tickets. Applix Enterprise allows LANcomp to customize the management of each of its service accounts and maintain separate asset and contact databases for each site. The firm's remote engineers need access to LANComp's databases from customer sites. Be-

Timeline

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September 18, 1997
Independent tests conducted by *InfoWorld* demonstrate that 100% Pure Java applications run on virtually any platform in an enterprise.

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September 9, 1997
Applix launches Any*ware* Now initiative, redoubles commitment to Java computing and formalization of Java-related marketing and R&D programs to accelerate companywide thin-client computing strategy.

▼

August 5, 1997
Applix announces customers adopting Applix Enterprise Any*ware*, the only customer satisfaction solution certified by Sun as 100% Pure Java.

▼

July 16, 1997
Applix Any*ware* available on Java station.

▼

July 14, 1997
Applix Any*ware* Office certified by Sun Microsystems as "100% Pure Java."

▼

December 16, 1996
Applix ships Any*ware* Office, the most complete suite of office applications for the Java Desktop.

▼

December 11, 1996
Applix demonstrates most extensive set of Webtop application solutions for hottest growing markets in industry.

▼

December 9, 1996
Applix introduces first integrated Web spreadsheet real-time OLAP solution.

▼

September 18, 1996
Applix announces availability of Applix Any*ware* on Silicon Graphics platform.

▼

August 26, 1996
Applix demonstrates first Java-based interactive service and support technology for the Internet.

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cause Applix is a 100% Pure Java solution, this information can be delivered to them no matter where they are.

You don't work alone

Whether you're in the office or on the road, you need to communicate with your co-workers and be able to share documents with them.

Applix Anyware Office supplies all the desktop productivity tools for thin clients by using a powerful server application engine and a thin Java display client. This allows heavy application work (spreadsheet calculations and database connectivity) to be done on servers while only the user interface is displayed on the thin client.

Dainty Foods, in Montreal, one of four divisions of MRRM Inc., began testing Applixware after David Wayland, vice president of finance and information systems, discovered it through the Web. "Java is a logical, common sense business solution," says Wayland. "We were impressed with Applix's commitment to Java."

Dainty Foods runs Applixware on a Sun Ultra 1 NC. "Applix's capabilities have dovetailed into our operations very nicely," says Wayland. "All four divisions now use the same systems, running the same software. We exchange internal and external messages and files in a way that wasn't possible before the switch to Applix."

Another user of Applixware is the U.S. Forest Service, which selected the software because it ran on all its platforms. The Forest Service is currently deploying NCs from Neoware Systems for geographic information systems nationwide, along with its office automation and software development needs.

The Virginia Department of Juvenile Justice discovered Applixware in the early 1990s when it sent out an RFP for an office automation platform. The vendor was IBM and Applix was part of the bundled software.

Applix was moving in a thin-client direction, and the department liked that, since it had been looking at X terminals as its early form of network computing. "When network computers hit the scene, our vision fell in place," says IS director George Faison. "Applix started developing Java thin client, and it was a perfect fit," since Applix products work on standalone units, networked PCs, browsers and thin clients.

Faison wants to cut administrative costs, and, he says,"by using Applix, we expect to save 50% on the total cost of software, licenses and upgrades over comparable products." When the department deploys thin-client computing in early 1998, "Applix and IBM will be key players," he notes.

Because Burlington Coat Factory, a retailer based in Burlington, N.H., wants to avoid

GIZMOS OF THE WORLD UNITE.

There's too much discord in the world. Especially when it comes to technology. Which is why we've always subscribed to a more unifying philosophy: Network computing. With our Java™ technologies, we're bringing together a world where the wristwatch is connected to the cell phone is connected to the TV is connected to the pager is connected to the smart card is connected to whatever you're holding at the moment. United we stand. THE NETWORK IS THE COMPUTER.™

Sun microsystems

Lower Cost of Ownership *Continued from p. 3*

ever, Sun Microsystems recently rolled out an internal network of 3,100 Java Stations. Sun has said that while its network traffic has increased, the packet size has decreased, so there hasn't been much of an overall impact on its network.

NCs will first find a home where there are dedicated applications—the sort of agent applications (a customer service agent, for example) where NCs will replace terminals. NCs and other thin clients are also likely to extend the reach of computing onto factory floors and shared kiosks.

NC vendors are also talking about systems that would allow a user to log on from anyplace on the network (or in the world) to get personal data and applications. This functionality is likely to become typical of thin-client networks, giving users new levels of portability and freedom.

Today, not every user on your network may be a candidate for a thin-client desktop. But used intelligently, thin clients have a lot to offer, with simplicity and low cost of ownership—qualities any IS manager should appreciate—topping the list.

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David Coursey is a columnist for Computerworld, an industry analyst and editor of the newsletter coursey.com. Lisa Halliday also contributed to this report.

A Big Edge *Continued from p. 8*

the difficulties inherent in fat client/server systems, it is implementing thin client to create a multi-tiered application architecture and a server-centric computing environment.

The company has thousands of workstations, but "80-90% of them don't need the robustness of large-scale office suites running on their desktops," says company CIO Mike Prince. "Although no decision has been made, we're looking at Applix Anyware Office as a way to provide a complete working environment to our thin-client users."

Beyond spreadsheets: OLAP

For users who prefer a spreadsheet interface, Applix can give them access to accounting systems (such as those from Lawson) and the Applix TM1 family of real-time OLAP products. By providing real-time data feeds, TM1 allows complex trading applications to monitor the effect of pricing fluctuations—in real-time.

A user connecting to TM1 via any standard browser on an intranet will go directly into the Anyware websheet and have the full functionality of the GUI (Windows, UNIX or Mac), client/server and TM1 components.

"People will increasingly use thin clients to access OLAP data to maximize the ease of data access while minimizing support costs," says Richard F. Creeth, author of *The OLAP Report*, published in Wilton, Conn.

Uniting the enterprise

Applix provides thin-client business solutions for managing customer interaction, realtime decision support and office productivity across globally networked enterprise environ-ments. Applix solutions can unite an enterprise by allowing data to be accessed, communicated, processed, analyzed and acted on in all areas of an organization.

Applix Anyware is proven decision support technology for interactive web applications. By providing location independence, desktop independence and the tools for exceptionally rapid application deployment, Anyware can change the speed at which critical decisions are made.

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This article was written by Sheryl Lindsell-Roberts, who is a free-lance writer.

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trim the fat

keep the meat

NCs cut the fatty costs

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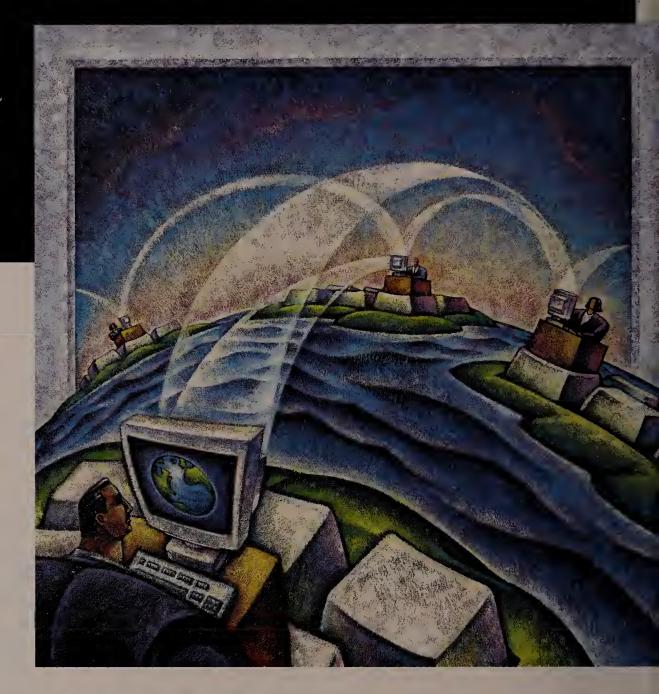
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Managing

The ART of the NEW DEAL

Is it time to renegotiate your outsourcing contract? If your business has changed, if you want a better deal or if you aren't happy with the outsourcer's performance, the answer could be yes. **Here's how to go about it**

By Alan S. Horowitz

When Larry McCullough took over in May as director of information technology operations at electric utility PECO Energy Co. in Philadelphia, the scuttlebutt was that IBM, PECO's outsourcing vendor, wasn't performing.

"I kept hearing the 'we/they': They're supposed to be doing this and they're not, and we've asked them to do that," he recalls. "I said, 'Hold on, let's get all this stuff squared away.' " Thus began a 3-month-long re-examination of the outsourcing arrangement that resulted in new goals, new understandings and new contract amendments between the parties.

"I think our relationship with IBM has strengthened" as a result, McCullough says.

Ken Sidon's outsourcing vendor asked for a renegotiation. The vendor found that maintaining customer satisfaction at the levels prescribed in the outsourcing agreement was costing more than expected, says Sidon, chief information officer and executive vice president at Cleveland-based Medical Mutual of Ohio.

McCullough's and Sidon's experiences aren't unusual. Outsourcing agreements are being renegotiated in pretty heavy numbers. A 1997 study by Dataquest found that 53% of IT outsourcing and 73% of business process outsourcing arrangements have been renegotiated. In fact, 17% were put under the microscope within six months of their initial signing. John Halvey, who heads the intellectual property and technology group at New York law firm Milbank, Tweed, Hadley & McCloy, reports that about one-third of the outsourcing deals his firm handles
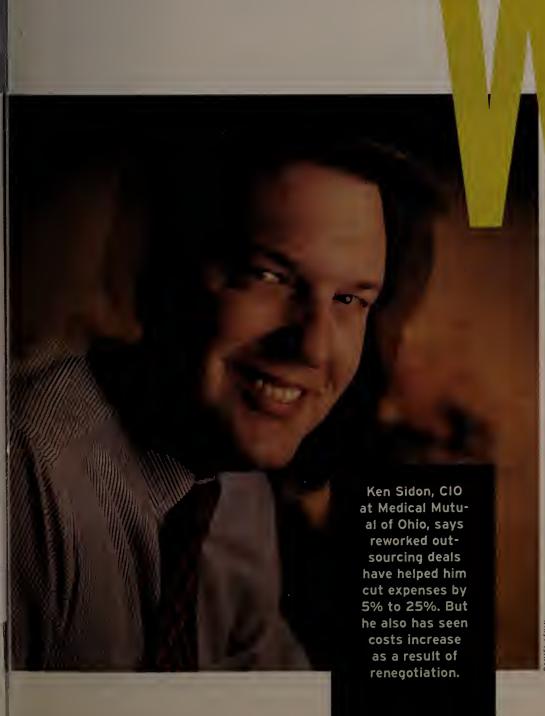
now involve renegotiation or termination of existing deals, up from one or two deals per year just a few years back. Linda Cohen, a research director at Gartner Group, Inc. in Stamford, Conn., recommends that her clients review all deals that are at least 3 years old for possible renegotiation.

But a renegotiation isn't necessarily triggered by unhappiness alone. Changing market conditions can play a part, too. "At the time [you signed the deal], your normal setup may have cost $3,000 to $4,000. Today, you can replace that for $1,000," Sidon says. In particular, hardware has become so cheap, he says, that where before he focused on upgrading machines, today he often looks for replacements.

Jerry Lucas, director of the utility industry practice at IBM Global Services, says changes in PECO's business, caused by changes in regulation of the utility industry, are largely what caused PECO and IBM to amend their original contract. "Changes in contracts are a normal part of the relationship," he says. "It should be expected and is healthy." In fact, as a result of the negotiations with PECO, IBM has instituted new business-change processes with its other clients so it and its contracts are more flexible and better able to meet changing client needs and circumstances.

For Alan Cranford, vice president of operations at Tenent Healthcare Corp. in Dallas, a commonplace 1990s phenomenon — a merger with another large company — prompted him to renegotiate. Technology advances are also making

Ken Sidon, CIO at Medical Mutual of Ohio, says reworked outsourcing deals have helped him cut expenses by 5% to 25%. But he also has seen costs increase as a result of renegotiation.

DANIEL LEVIN

The ART of the NEW DEAL

renegotiations more commonplace. A deal done five years ago probably didn't address Internet and intranet needs, for example. Today, those are vital slices of virtually every company's technology pie.

Taking it a step further, renegotiation can produce significant financial results. Sidon says reworked deals have helped him cut expenses 5% to 25%.

WHAT TO DO

If you feel the need to renegotiate, there are several things you need to do. First, recognize the risks of starting the renegotiation process. "What is the impact if you were to change suppliers?" asks Warren Gallant, chief operating officer at Technology Partners, Inc., a Houston consulting firm. "When you actually start talking about the impact of changing suppliers, that's when you see what the major issues and problems are."

But when you acknowledge that renegotiation is a two-way street, the box you open may have more in common with Pandora than Intel. "In almost every circumstance that I've been involved in, when our client has said, 'I want to renegotiate, and here's my list of five issues,' the vendor has a list of their own five issues," Halvey says. Sidon also has seen costs increase as a result of renegotiation, making cost cutting a less-than-certain outcome of the process.

That said, your first job is knowing what you really want. "Before you start a renegotiation, you better have a very clear-cut sense of what it is that you want to get out of it," Halvey warns. "Do you want lower prices, better performance, or is it that you simply want to get out of the contract?"

Part of the discovery process should involve upper management. "Executive management has to be involved to pass on the goals," Cohen says. "Why are we doing an outsourcing deal today? What do we expect of it?"

Know what's in the contract, and know your rights and responsibilities, Halvey says. And, as an information systems manager, do your homework. "I heard a lot of people saying, 'That's in the contract, that's not in the contract,' and they had no clue," McCullough says. "It's these dime-store lawyers, a technician that's trying to interpret if they're supposed to do something. It's not up to that technician to make that determination." When your employees say something isn't being done that should be, or the reverse, make sure their interpretation matches the contract before confronting your vendor.

TEAM EFFORT

A team approach is essential. McCullough included IS financial folks, those responsible for asset tracking and asset management, and all managers and directors on his negotiating team.

Donald Frey, a professor of industrial engineering at Northwestern University in Evanston, Ill., had his staff split into teams when he negotiated outsourcing agreements in his previous position as chairman and CEO of Bell & Howell Co. One team represented the company and another the vendor, and they role-played to help reveal what was important and not so important to both sides.

Participants may drag out a laundry list of wishes, but frequently it's a few hot-button issues that are the principal points of tension. Here's how McCullough found out what really bothered people: He had his employees and IBM's representatives sit in a room. (McCullough also included a trained facilitator because he thought the session might get emotional. It didn't get as heated as he expected, and he didn't use the facilitator at subsequent meetings, but you might consider using one.) He handed out six stickers to each side and asked everyone to write on each sticker a major issue they wanted discussed.

Six issues appeared more than once, so he figured they were the most important and addressed those first. Then he had each team write, in one or two sentences, its position on each issue. The people with responsibility for those areas on both teams broke into groups and performed a gap analysis, seeing what the differences were. From there, they were able to start a dialogue that eventually led to resolving the issues and getting the relationship back on track.

That mirrors the advice of Howard Lackow, executive vice president and director of consulting at Technology and Business Integrators in Woodcliff Lake, N.J. "Most people will negotiate the easy things first and leave the hard things last," he says. "Do the hard things first, and the rest will fall into place."

He also recommends that you don't just come to the table with a list of complaints. If you want negotiations to be successful, you need to tell your vendor what you want and then use that as negotiating points. And don't be hard-nosed. "You have to compromise," Lackow says. "You're talking about five years, 10 years that you're going to live together. [Don't] nickel-and-dime them to death."

McCullough stresses the importance of putting the contract in easy-to-comprehend language so all parties understand their responsibilities. When negotiations were finished, he circulated to everyone with a need to know a simple four-page summary of the agreement. That gets everyone reading from the same page and could head off problems later.

And don't be cagey. William B. Bierce, an attorney at New York law firm Bierce & Kenerson PC, says, "The best [negotiating] strategy is always to lay out the facts and your needs."

Be aware that not all deals end up on the operating table. John Lynch, director of global outsourcing management organization at Xerox Corp. in Stamford, Conn., says he hasn't had to renegotiate his outsourcing deals because he's kept them very flexible. His aim from the beginning was to have an "evergreen contract," so he has kept a contract's main elements, such as those relating to technology changes and human resources, generic. When something new comes up, he often awards those deals to vendors other than his primary one if they're better suited

HOW TO AVOID FUTURE PROBLEMS

AGGRESSIVELY MANAGE THE CONTRACT: Gerald Hoffman, president of Senior Strategy Group, a Chicago consulting firm, says staffs must forever have 5% to 10% of the number of people you outsourced who can continually monitor and manage the outsourcing agreement to make sure things are done right. "The CEO myth is, 'I'll write a check, and I'll quit worrying about computing,' " Hoffman says. "You have to manage it."

CREATE AN AUDIT TRAIL: You can't claim substandard performance if you can't document it. Keep records of where the vendor's performance was inadequate; keep notes of all meetings; put your dissatisfactions in writing. "You have to be consistent about your audits and about documenting poor performance," says Gartner analyst Linda Cohen.

ESCAPE CLAUSE: Almost all contracts have escape clauses, but some come with heavy financial penalties. While creating a contract, remember that it may have to be renegotiated before it expires and design the escape clause with that in mind.

INTERNAL CHANGES: Make sure your departments know that outsourcing may well change things for them. A department that's highly profitable and has enjoyed special treatment from an internal IT department will likely be treated the same as all departments when the IT function is outsourced. That can cause dissatisfaction, even when the vendor is performing well.
— Alan S. Horowitz

to handle that piece of business.

Finally, realize that the renegotiating process may not have a discrete beginning, middle and end. Patrick Zilvitis, vice president of corporate IT at Gillette Co. in Boston, says, "I don't believe that contract negotiations are ever over. Sometimes the scope changes; sometimes the people change; sometimes the companies change. Negotiations are something you do periodically with most of your business partners." □

Horowitz is a freelance writer in Salt Lake City.

Hints of Discontent

Concerned about some of your people jumping ship? Look and listen for those warning signs that they want to move to greener pastures

By Steve Alexander

Roland Voyages remembers an information systems worker in his area who one day developed some new interests.

"He began working on projects outside his area of primary responsibility and learning technologies outside his primary scope," recalls Voyages, director of technical services at NationsBanc Capital Markets, Inc. in New York.

The IS worker soon left for another job; his new interests had been a telltale sign that he was preparing to work elsewhere.

At a time when IS turnover rates are hovering around 20%, many IS executives such as Voyages are watching their employees for signs that they may be about to leave. IS managers and consultants say there are many such signs that may indicate an impending departure. And an IS manager who pays attention to them may be able to keep ahead of the attrition curve by heading off at least some departures with cash, noncash offers such as flexible work hours or at least a willingness to listen to employees' complaints.

Listening may be the first step to correcting problems that can be fixed without cash and also may help keep employees whose biggest gripe is that their ideas are ignored.

Voyages says paying attention to the telltale signs can make all the difference. "If someone wants to take an unrelated course out of general interest, that's an indicator that he or she is taking a position elsewhere, where that technology is used," he says.

Bruce Fern, an IS retention consultant at Integral Training Systems in Half Moon Bay, Calif., advises managers to look for changes in normal employee behavior, such as the following:
- Becoming withdrawn from others.
- Reducing participation in group activities.
- Reducing productivity.
- Changing work hours.

He also says IS managers should be on the lookout for quiet people who start complaining, and for complainers who become quiet. The latter may have stopped complaining because they've given up on their jobs, he says.

Although the information technology personnel shortage is forcing managers to pay more attention to the warning signs, many managers still fail to act when they see them because they're uncomfortable with confrontation, Fern says. And when IS managers don't react early, it's difficult to retain employees.

"It's too late once workers have decided to resign because by then the employee has made the decision, interviewed for the new job, negotiated the job and talked to his or her family about relocation," Fern says.

A former IS executive says managers should watch out for changes in employee behavior patterns such as wearing suits, taking long lunches, talking about salaries at other companies and bringing a newspaper to work every day. Such workers either are looking for a job or interviewing for one, says Jeanne Simia, former director of IS at the American Association of Retired Persons in Washington and now director of program design at distance learning firm Caliber Learning Network in Baltimore.

Simia says most IS managers aren't paying attention to the warning signs, and many really aren't focused on retention at all. "I think it's fascinating that in most large IS shops, they have an elaborate disaster recovery plan and a risk management strategy, but they don't have a scenario about what they would do if half the IS people left."

Jean Delaney Nelson, second vice president for application development at Minnesota Mutual Life Insurance Co. in St. Paul, Minn., has another early-warning sign: Watch out when employees start taking time off at odd hours of the day. Also take note when workers seem to withdraw from their work teams and don't socialize as much with other employees outside work.

"I've been surprised a few times by employee departures, but not often. Most of the time, I knew they were looking because they told me voluntarily or my management team and I recognized the signs and asked," Delaney Nelson says.

"The telltale sign is open whining and complaining," says David Foote, a managing partner at Cromwell Partners LLC, an IS consulting firm in Stamford, Conn., that deals with retention issues. "People make no bones about saying they are overworked and underpaid, or some combination of those factors. The workers who are taking calls from headhunters openly talk about it. Usually, those people are unhappy because they feel they're not being paid enough or not getting enough respect."

But Michael Pesci, a senior IS technical trainer at brokerage firm Smith Barney, Inc. in New York, says the biggest telltale sign IS people are looking for new jobs is that they develop a lackadaisical attitude toward their work.

"People who were very interested in their projects seem to lose interest in them. If somebody calls them to go out to lunch, they'll go right away instead of doing their work," says Pesci, a former IS project manager and analyst.

"Unfortunately, by the time most managers realize what's going on, it already is too late. The people have made up their minds to go elsewhere," Pesci says. "But, to be fair to IS managers, they have other jobs to do. They are not put there to manage people, but to manage projects. The people are treated as secondary. That is a common failing of IS, and one that has to change if IS workers are to be retained." □

Alexander is a freelance writer in Edina, Minn.

Rules-driven apps can change as fast as business changes

When a company changes its pricing or credit policies, it can take precious time to implement those changes in a critical application. In the past, making these changes required weeks of technical staff programming and application downtime. This was acceptable when policies seldom changed and internal customer service reps were the primary link to the customer. However, with the advent of the Internet and direct, self-service access to business applications on the Web, support for rapid business change is now a competitive imperative.

A new approach to application development, called "rules-driven" development, shows promise as a means of creating applications which can adapt quickly to business change. Instead of embedding business rules and policies within application code, rules and policies are externalized from the application in a rules-base, which can be accessed by many applications and changed easily (by the business analyst) to reflect policy change immediately. This approach minimizes the need for developers to patch or change existing code, which may run the risk of introducing new bugs into working code.

What are business rules?

Business rules are programmatic implementations of the policies and practices of a business organization. For example, business rules would control the following aspects of a business:

- *When to offer a discount*
- *When to restock inventory*
- *Whether or not to extend credit to a customer and how much to extend*
- *What configuration is valid for a sales order*
- *When to escalate a customer problem*

Business rules and policies are central to any business operation, and yet are often scattered throughout the organization, across applications, manuals, and in individuals' minds. This makes it very hard to achieve consistency throughout a business and to change rules on a company-wide basis.

The concept of centralizing business rules into a single rules engine allows organizations to react quickly to business change. For example, if customers who earn $20,000-$40,000 are better credit risks than those who earn between $60,000 and $80,000, a simple entry in the rules-base will change the existing business rule and apply it to all applications accessing the business rule. The rules-base eliminates the need to locate, change, and test all instances of applications which use the rule.

Applications support a rules-driven approach

A number of products on the market claim to support a rules-driven approach. One company, Neuron Data, leads in this area by providing comprehensive, rules-driven development tools for C, C++, and Java. Neuron Data's Elements product line offers powerful, easy-to-use rules engines within a robust development environment. Elements Presenter/J and Advisor/J are new products that provide the essential tools for building adaptive, self-service applications in Java.

Many of the major wins in the "rules-driven" development arena concentrate on three application areas: e-commerce, call center, and financial services. "Changing the knowledge base used to take six to eight weeks. With Elements we can make the same rule changes in 20 minutes," stated one customer, *American Greetings.* Neuron Data, 1310 Villa Street, Mountain View, CA 94041 Tel: (650) 528-3450, Fax (650) 943-2752, Web site: **www.elements.com**

PAUL A. STRASSMANN

TO CUT COSTS, FIND THE COSTLIEST USERS

he price of "low-cost computing" has gotten very high: Distributed computing has become the largest single item in every company's computer budget.

If there's good news in this, it's that the money needed for year 2000 remedies and bailing out failed client/server projects can be squeezed out of bloated total cost of ownership (TCO) figures. The problem is knowing where most of the fat is hidden.

Here's where to start: Find the most expensive users. By analyzing how much money is spent to meet the needs of different kinds of users, we can find the fat.

Banks make the best laboratory subjects for examining TCO. They closely monitor IT costs, and nearly all bank workers are information workers. And, banks spend about half their IT budgets on distributed computing.

I have reliable numbers of total IT spending last year by 13 U.S. commercial banks. Those banks rank among the top IT spenders. Their total IT budgets now average 25% of what they pay out to their employees as compensation, consume 13% of noninterest costs (overhead) and eat up one-third of the total profits the banks earn. With all that spending, there's certainly room for reducing total ownership costs.

DIRECT AND INDIRECT COSTS

I looked at both Direct Budgeted Costs (DBC) and Indirect User Costs (IUC), which together make up the total cost of ownership. Banks define DBCs as their IT spending. IT includes the costs of hardware, software, telecommunications, systems development, systems maintenance and computer operations. IUCs represent the time users spend on chores that the IT organization can't or won't deliver, such as rebooting a crashed desktop, waiting for the help desk to answer a request and then wait-

ing for someone to fix the problem, or trying to fix a problem without anyone's assistance.

I have found that the per-employee DBC — the visible component of TCO — is related to employee compensation. Low-paid tellers will work with terminals whose DBC is perhaps as little as $2,000 per year. The most-often quoted benchmarks are based on an average employee salary of $32,000 per year and show up as having DBCs from $4,500 to $6,000. Investment analysts, currency traders and top techies would consider it a blow to their status if they had to use anything but the biggest and best. That can run up the DBC to between $12,000 and $15,000 because the equipment consumes large amounts of unproductive labor.

Most of the excessive total cost of ownership figures can be found among those users who will be the most vocal in defending their unique computer configurations. I have found cases where it's much less expensive to give such a complainer two computers: one to experiment with and another that conforms to corporate standards. After all, the cost of hardware is now less than 35 cents per hour, which is a small fraction of the nuisance one can create by tying up support staff that costs $40 per hour.

Then there are the IUCs. Employees waste time coping with avoidable mishaps. They also lose productivity because they take time to do work for which they aren't qualified. The IUCs are, therefore, related to the employee's compensation and the failure of the computing infrastructure to eliminate avoidable disruptions.

The IUC for a low-reliability network used by highly paid professionals can run as high as $11,000. In contrast, a high-reliability network can have an IUC as low as $1,400. Cutting back on unproductive downtime, for whatever cause, can be the source of enormous savings.

IMPLICATIONS FOR EXECUTIVES

I believe most companies have costly users, their own equivalent of those banks' investment analysts and traders. But how fast one can slim down high TCO depends on how quickly the executives responsible for IT can halt the profligate practices that have grown along with the distribution of computing power. Most of this can be achieved by shifting much of the labor-intensive support costs to sophisticated network controls. That requires standardization of operating practices while finding solutions that don't interfere with personal privacy and individuals' freedom to use the computer for knowledge enhancement.
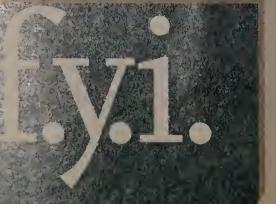
It may take a change in management to accomplish that. (About 40% of CIO turnover is a harbinger of things to come; see CW, Nov. 10.) But the smart operators won't wait. CIOs can't hide the real costs of computing much longer. Profits have been good recently and interest rates low, but if that changes, cutting total cost of ownership will be high on everybody's list. For the 13 banks, we're talking about reducing the TCO for 291,000 PCs. That's $1.5 billion per year. It will surely get attention as soon as top management figures out what TCO is all about.

The time has come to start extracting savings from excessive total cost of ownership before one is mandated to do so under duress that involves a hasty transition. A CIO must act now to cut the excess from TCO or be forced to do it later — and have to hunt for a new job at the same time. □

Strassmann (www.strassmann.com) favors cutting avoidable operating costs before requesting funds for worthwhile new investments in information management.

Users get techie

A re users behaving more like IT professionals? Yes, according to a recent study by Forrester Research, Inc. in Cambridge, Mass.

Forrester's study of 453 employees at North American corporations and government agencies with more than 1,000 employees found the following:
▶ Twenty-two percent are performing tasks that IT people do.

More than half of them have written macros; about a third have downloaded an application.
▶ Fifty-nine percent of those advanced users share their work, mostly with people in their workgroup. But about 9% of all advanced users share it with people outside their companies.
▶ More than half of all users want to learn more IT. Thirty-

three percent want to learn advanced functions in an application, 28% want to know how to access and analyze data, and 27% yearn to create applications.

So, what does all this mean? It's just more evidence that the role of corporate IS is to enable, guide and contract technology work done by others.

"We think by 2002, up to

70% of IT deliverables will come from someone who is not an IS employee," says Waverly Deutsch, director of computing strategies at Forrester. But IS will still be in charge of managing those deliverables as well as big systems, he says.

The research was conducted in June and August and appears in a report titled "Tapping IT Volunteers."

Buyer's Guide

PRODUCT REVIEW: Borland's JBuilder is suitable for enterprise-class applications
SNEAK PEEK: The midrange will remain the sweet spot in the notebook market

JBUILDER PRO
THE PRINCE OF IDEs

By Howard Millman

Borland's JBuilder Pro offers developers a flexible, productive tool set that's easy to learn and live with. Designed to produce 100% Pure Java applications, this platform-independent, integrated development environment (IDE) delivers a wide range of one-size-fits-all database connectivity options. High-speed native driver options are available. It features an intuitively integrated and responsive interface that accelerates switching between tools and a two-way source code viewer that synchronizes syntactical text with visual code.

JBuilder's Beans Express speeds the development of pure JavaBean components

Despite JBuilder Pro's sweepingly comprehensive tool set, new devel-

opers and those new to Java can come up to speed in as little as two weeks with the help of the tool set's extensive online and printed documentation, helpful wizards and samples. Previous users of Borland's Delphi products will find learning even easier than will other users because JBuilder Pro's IDE shares a common look and feel with its relatives. It is built around an open architecture, and you can customize the IDE and add third-party elements such as computer-aided software engineering, testing, version control, editors, wizards, JavaBeans and applets.

JBuilder, like rival products Visual Cafe from Symantec Corp. and Java Workshop from Sun Microsystems, Inc., suffers from Java's sluggish runtime execution, but Borland makes the best out of Java's strengths.

THREE'S COMPANY

Borland's JBuilder family is composed of three products: JBuilder Pro is for experienced developers who create Pure Java business and database applications, applets and JavaBeans. JBuilder Standard is for novices who want experience creating Pure Java Java-Beans, applets and rudimentary applications. JBuilder Client/Server Suite creates multitier, scalable, database access applications that can be used in heterogeneous environments. It includes stored procedure data sets, Intersolv, Inc.'s PVCS Version Manager, Common Object Request Broker Architecture (CORBA) support and an expanded number of SQL tools. Client/Server Suite, not ready in time for my re-

view, is slated to ship this month.

I used JBuilder Pro, testing its rapid application development (RAD) features to build Java-Bean components and a Java applet. It was like using a racehorse to plow a vegetable garden; it's clear JBuilder Pro can accomplish considerably more than this.
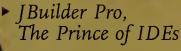
PIECES OF THE WHOLE

The program's strong project management features include Borland's Workbench, a high-productivity IDE that displays essential development tools, menus and a Component Palette in a unified, logical arrangement. AppBrowser, a dominant part of the IDE, cycles through several panes, depending on the task at hand. For example, you can display a project browser, directory browser, graphical debugger, class hierarchy browser, search results or the two-way source code editor. That arrangement boosts productivity and eases team development coordination because the program assumes responsibility for keeping the syntactical and visual code in sync. It also simplifies shuttling between tasks, such as building a JavaBean and then jumping into the application that uses it.

A key feature of the Class/Property Browser is that it lets you browse classes, variables, application programming interfaces and JavaBeans that you refer to even if they aren't

an integral part of your project. The Browser provides many ways to navigate to these files and simplifies debugging by analyzing third-party classes that lack documentation.

The two-way editor is easy to use and provides a range of mapping schemes. You can't customize the keystrokes, but you can add your favorite editor if its layout isn't reflected. It makes you more productive and lets you choose an editing scheme you have used before rather than having to learn one of JBuilder Pro's editors. And Borland claims that JBuilder Pro's incremental compiler crunches up to 10,000 lines of code per second (after the initial compile, which runs slower). We had to accept the company's word rather than test that claim.

Minor time-savers include easy bookmarking in the two-way editor.

PRODUCT REVIEW

▶ *JBuilder Pro,*
The Prince of IDEs

OVERALL A GRADE

BORLAND INTERNATIONAL, INC.
Scotts Valley, Calif.
(800) 233-2444
www.borland.com

Pros: Superbly integrated; 100% Pure Java code; relatively flat learning curve, especially for previous Borland users; fully supports Java Development Kit 1.1. The forthcoming client/server version will offer versions control, CORBA and more SQL tools.
Cons: Java's runtime execution is sluggish, as it is with JBuilder's competitors.
Development platforms: Windows 95 and NT
Price: JBuilder Professional — $299 upgrade/
$799 otherwise
JBuilder Standard — $99
JBuilder Client/Server — $2,495

JBUILDER PRO
THE PRINCE OF IDES

You can create, jump to and delete bookmarks with keystrokes, rather than the more common — and more chafing — dialog box. The visual Component Palette and Object Gallery likewise increase productivity.

The Component Palette includes several dozen prebuilt JavaBeans with source code. You can add customized or third-party components. Sample JavaBeans include BeanInfo, OK/Cancel and a Database Bean that accelerates visual database layout. The Object Gallery's shortcuts (files, wizards and code snippets), plus predefined reusable objects, will further unburden developers.

PAIN-FREE, ALMOST

The documentation, wizards and samples make it relatively painless for a beginner to get started and are helpful even for experienced developers. I appreciated JBuilder Pro's numerous wizards, especially the Interaction Wizard, which helps you link elements from Sun's Java Development Kit 1.1, JBuilder Pro and third-party JavaBean components, often without the need for additional code.

JBuilder Pro's graphical debugger, developed specifically to debug Java code, has all the timesaving features expected in a RAD tool set. It's so easy to use that even novices can master it in hours. A key feature of the debugger — the execution log — displays the output from the current run in one of the debugger's panes. If you have multiple projects open, say when building multiple class libraries simultaneously, the log's tabs keep output reports isolated, thereby minimizing code chaos.

DataExpress provides database connectivity aids, especially for applications that will run over the Internet or an intranet. It communicates using native drivers, Java Database Connectivity (JDBC) drivers and a JDBC/Open Database Connectivity (ODBC) bridge. I created a small database to get a feel for how DataExpress worked. Its intelligent design and clear tutorial made it relatively painless.

Java Open Database Connectivity, analogous to Microsoft's ODBC, offers the convenience of attaching to a wide variety of databases. I'd recommend that if you build applications designed to connect to a specific database, check with that database's vendor to see if it offers a Pure Java driver.

Data Gateway, optionally available for JBuilder Pro but bundled with Client/Server Suite, allows applications and applets to run within a client-side World Wide Web browser. It supports partitioning, which makes it well-suited for building thin clients.

Borland's genesis was in application development tools and languages. JBuilder demonstrates that the company knows how to listen to and understand the needs of developers. Overall, this is certainly among the best of the second-generation Pure Java RAD tools.□

Millman operates the Data System Services Group, a vendor-independent consultancy. He can be reached at (914) 271-6883 or hmillman @ibm.net.

Sneak peek: THE SKINNY ON NOTEBOOKS

By Amy Malloy

Although the bulk of the sales in the notebook arena will still be in what the industry calls the sweet spot — notebooks that cost $2,500 to $3,000 and weigh between 6 and 8 pounds — look to the upper and lower ends of the market to find innovation, say industry analysts who *Computerworld* asked to comment on the 1998 crop of notebooks.

Featherweights

Expect a lot of developments in the lighter product area. More machines will weigh 4 pounds or less. "The target will be 4 pounds or below for folks wanting to differentiate themselves as having a light product," says Rob Enderle, a senior analyst at Giga Information Group, Inc. in Santa Clara, Calif.

Analysts warn that there are trade-offs — primarily ergonomics — with products that weigh only a few pounds and have undersized keyboards. Mininotebooks, such as Toshiba America, Inc.'s Libretto and Mitsubishi Electric Corp.'s Amity, fall somewhere between a laptop and a handheld. They typically weigh less than 3 pounds, use a Pentium processor and run Windows 95 rather than Microsoft Corp.'s Windows CE or a proprietary handheld operating system.
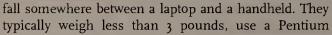
Right now, mininotebooks cost between $2,000 and $2,500. Next spring, prices should drop dramatically to about $1,000. That will make them a much more viable option for people who want a second device in addition to their existing desktop or notebook system, says Katrina Dalhquist, an analyst at International Data Corp. (IDC) in Framingham, Mass.
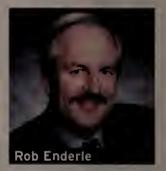
However, Ken Dulaney, vice president of mobile computing at Gartner Group, Inc. in Stamford, Conn., says the outlook for mininotebooks isn't promising. Gartner predicts that the mininotebook is going to fail, capturing less than 5% of the market. Dulaney suggests only experienced notebook buyers venture into this market.

The new buzzword in portable computing could be "ultra-ultraportables," says Mike McGuire, an analyst at Dataquest in San Jose, Calif. The ultra-ultraportable market represents a class of products that in the past may have been grouped with mininotebooks. They will appear early next year and run Windows CE 2.0. They will weigh 1.5 to 3 pounds and will use solid-state storage.

Heavyweights

At the other end of the notebook spectrum, a new generation of supernotebooks and transportables will appear early next year. Supernotebooks will run both mobile and desktop technologies — desktop-style CPUs and hard drives — and weigh somewhere between 8 and 10 pounds, McGuire says. The battery will be optional because supercomputers will be used differently from standard notebooks, he says.

Transportables are part of the higher-end niche. They will be lighter than transportables of the past, weighing about 15 pounds, McGuire says. Transportables will run desktop parts, but the use of a LCD screen will keep them priced in the high-end notebook range. Typical users will include auditors and engineers who remain at a site for an extended amount of time.

Midweights

The middleweight products will still represent the bulk of the notebook sales, although they are going to slim down, perhaps shedding a couple of pounds.

"Thin and wide is the phrase for 1998," Dulaney says. Notebooks that now weigh 6 to 8 pounds will weigh between 4 and 6 pounds. These new midweight systems appearing in mid to late 1998 will be able to handle option combinations previously limited to high-end notebooks — options such as a second battery or combinations of floppy drives and CD-ROM drives.

Price

Although some changes in technology will reduce notebook prices a bit, don't expect dramatic price drops over the next year, analysts say. For starters, wider use of high-resolution dual-scan displays will bring prices down, but the amount won't be clear until the middle of next year, according to Enderle. That will be seen primarily in the midrange and low-end markets; high-end notebooks will continue to use thin-film transistor screens.

At the high end, where 14-in. screens are becoming more common, larger screens will cost more, neutralizing the price drops for RAM and hard drives, says Phillip Redman, a senior analyst at The Yankee Group in Boston.

Processors/Speed

Following the Intel Corp. processor cycle, notebooks will increase in speed; by the end of next year, notebooks will use Pentium II technology. Expect to see at least 300-MHz CPUs on high-end notebooks and a jump from 133 MHz to 200 MHz in the lower end, Dulaney says.

The mobile Pentium II processor, code-named Deschutes, will be used in notebooks and other computers as well, but mobile users benefit the most because of the lower power consumption it offers, Dulaney says.

Deschutes will appear around the second quarter of next year or end of the first quarter, Dalhquist predicts.□

Notebook market share for U.S.	
Toshiba	18.9%
IBM	14.8%
Compaq	11.6%
Acer	9.7%
Dell	5.6%
Total others	39.4%

Source: Dataquest

Rob Enderle

Mike McGuire

Phillip Redman

Malloy is Computerworld's associate editor, Buyer's guide.

In Depth

THESE ARE HARD TIMES FOR APPLE LOYALISTS. RED INK, BOARDROOM SOAP OPERAS, MICROSOFT'S $150 MILLION PAT ON THE HEAD. BUT DID YOU EVER SEE A DOS TATTOO? AN ODE TO ORACLE? APPLE IS AS MUCH ABOUT LIFESTYLE AS COMPUTING. TO THE TRUE BELIEVERS, LIFE ITS OWN SELF WILL BE ...

{ By Joseph E. Maglitta }

if you just arrived, this breakout session is "Barbarians at the Gates: Angry Apple Activists in the Microsoft Millennium." Let's get started.

Today, we'll explore how the latest big changes at Apple Computer, Inc. are affecting the devoted Macintosh programmers and users in your organization. We'll hear from actual Mac fanatics, including some who are bruised and bitter.

Now, I know many of you think Mac Moonies deserve nothing more than a resounding, "What took you so long?" and a canceled *MacWeek* subscription.

If you suffered years of snide snipes at "Windoze" and "PeeCees," it's easy to scorn Apple loyalists as preachy technosnobs who would spend hours spewing technical trivia that "proved" Apple's superiority until you cried uncle and signed off on the damned overpriced stuff just to make them go away.

{Hyperventilates, sips water. Sympathetic nods from audience.}

But peel back those sour skins, and you'll find many folks with the mix of passion, intellect and loyalty you want and need in your technology organization. By and large, the Mac faithful care deeply about technological elegance and excellence, about ease of use, about innovation and creative thought, about an organization's — maybe even society's — soul. You could do worse.

And let's be realistic: Even if Apple tanks, you've still got bushels of money sunk into Macs and software. The stuff won't become compost any time soon. In fact, World Wide Web commerce and the Internet could make Macs even more important.

So it's in everybody's best interest to find ways to graft the old and the new.

Now let's meet some Mac fanatics. Can we dim the lights, please?

{SLIDE: Close-up of Mac tattoo.}

Let's start with T. J. He and the next fellow will give you some idea about the depth of emotion and loyalty here.

It's late November in Chicago. But T. J. — his full name is Todd Jarrad — isn't afraid to bare his left shoulder and show off . . . look at this . . . a Mac tattoo. This 28-year-old multimedia designer at Absolute Graphics, Inc. in Chicago proudly explained that this is the "Picasso" Mac logo, popular a few years ago. When was the last time you saw an "Internet Explorer 2.0" tattoo?

Next slide, please.

{SLIDE: MAC MAVN license plate.}

I love this one. MAC MAVN. This van belongs to Scott Goldman, president of Web and Email Wireless NOW in Calabasas, Calif., and a partner in Strategis Group in Washington. This is loyalty to die for.

I think everybody will remember the next slide.

{SLIDE: Screen capture from classic 1984 Apple TV advertisement. Spontaneous applause, cries of "Bravo!"}

Remember when it seemed Apple really could break the IBM/Intel spell? Greg Wetterau sure does — even 13 years later. Let's listen to Wetterau, a forced convert to Windows who now works at Economic and Engineering Services, Inc. in Bellevue, Wash.:

"I still can't stop picturing that gigantic screen, with the huge face of that man with glasses, looming over the crowd of helpless people. I kept waiting for someone to come running through the doors to break the trance and save the day. It never happened."

Does anybody else find that really sad? You're nodding in the front there, ma'am. It *is* sad, isn't it? Believe it or not, though, Wetterau is hopeful:

"Microsoft has a lot to learn from the efficiency of the Mac OS. Perhaps they'll finally work out some of the bugs from their own system. Perhaps my computer will stop freezing up every day, and my recycle bin won't destroy my files all the time. Perhaps I'll finally figure out how to use this stinking thing."

Forgive Mr. Wetterau's bitterness, folks. You'd be gassy, too, if you'd watched great technology rot on the tree for 15 years.

Think about what Apple Nation has suffered recently. Just as it was getting over his loss, Steve Jobs returns. Then Apple accepts $150 million of Microsoft fertilizer. OK, OK, it's officially an "equity stake." Then Michael Dell says if he were CEO, he'd stuff Apple down the Insinkerator.

The latest humiliations? New reports that Bill Gates long ago urged Jobs to license third parties. Then Apple starts pushing Rhapsody and OpenStep Yellow Box to create PC and Windows-compatible applications. And the new G3 computers don't even have a name, for pity's sake! All the while, company execs are bailing out as fast as they print out their resumes.

Let's keep listening as Apple runs the user gauntlet . . .

"Licensing was a good idea that was handled entirely wrong at Cupertino."
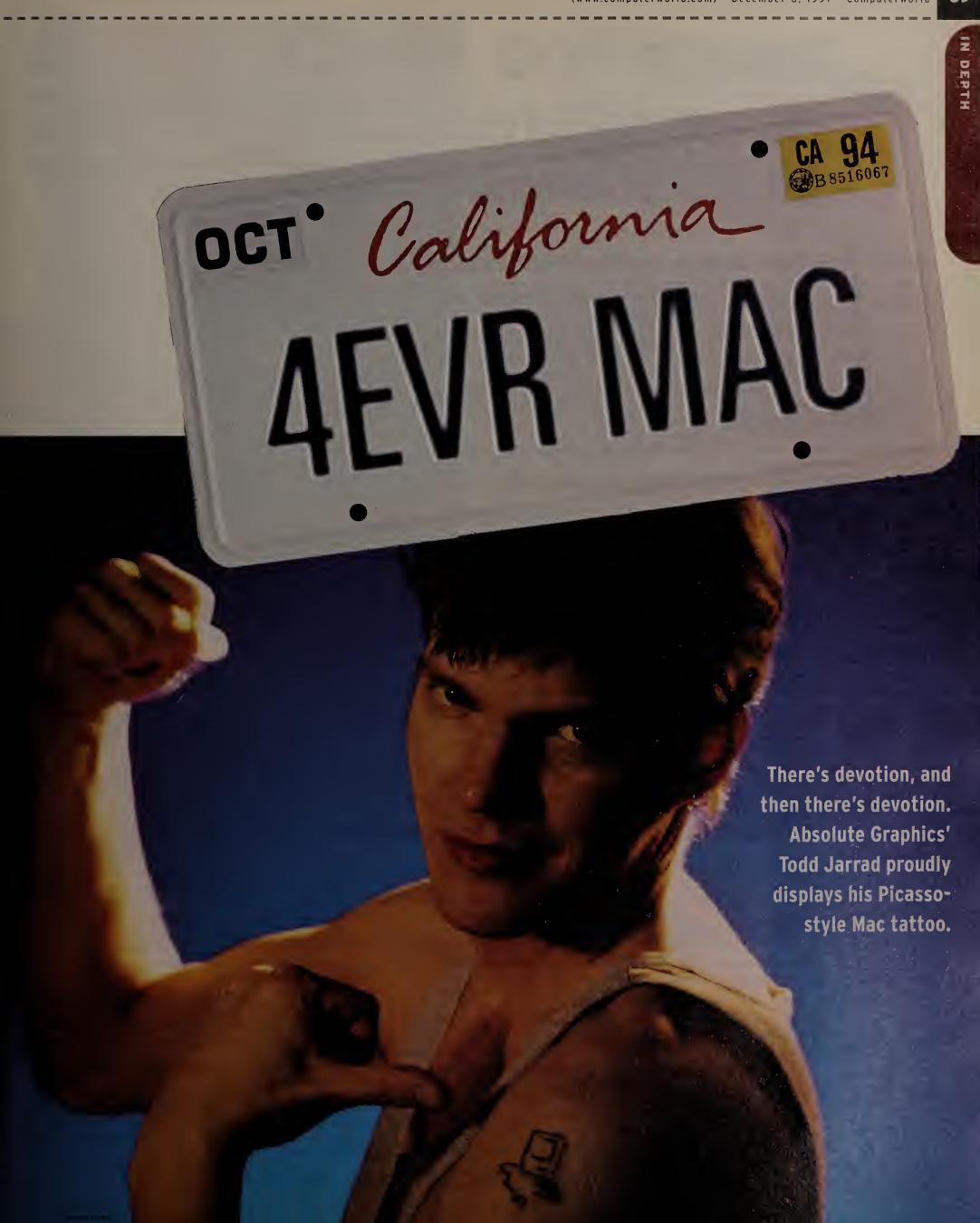
This is Steve Krause, a Mac programmer at Dennis Jose & Associates in Corpus Christi, Texas. What was the problem, Steve?

"Greed, paranoia, self-absorption and greed. The shame is that a truly superior hardware and operating system will be forgotten in less than a half-dozen years."

Ouch. Next slide, please.

Here's a good one. It's an excerpt from author and Brooklyn Polytech teacher Elliotte Rusty Harold explaining why he's halting work on *The Well Connected Mac,* an online trove of Mac info.

OCT California

4EVR MAC

CA 94
B 8516067

There's devotion, and
then there's devotion.
Absolute Graphics'
Todd Jarrad proudly
displays his Picasso-
style Mac tattoo.

CA 94
B5516067
OCT • California
4EVR MAC

CHRIS MICHAELS/FPG INTERNATIONAL

A Mac affirmation

- I am a PC convert.
- I have been disheartened recently, but I love and believe in the Mac.
- I have never experienced a product that so fulfilled and exceeded all my hopes for it.
- I cannot even look at a Windows machine.
- I have to believe that Apple will turn it around.
- It is a much better way to work in the electronic world.
- It will be really sad to have to live in a world where such a better product could not survive.
- I will do all I can to see that does not happen (as little as I may be able to do).
- I cannot keep quiet when the market leader's mediocre product controls the majority of humanity's access to the sum total of human existence.
- I will buy Macs as long as they make them.
- I will use them long after.
- And I truly mean the cliche, "You can have my Mac . . . when you pry the mouse from my cold, dead fingers."

{SLIDE: Screen capture of www.macfaq.com home page.}

"I hoped to counterpoint the mindless evangelism promulgated by Guy Kawasaki and his dittoheads. He probably did more damage to the cause of the Mac than [Jimmy] Swaggart did to Christianity. In the last year or so, Kawasaki's antics have pounded the final nails into Apple's coffin in corporate sites."

Whoa, fella! Is it getting warm in here?

Let's change gears for a minute and talk about vendors. Remember that Jackson Five hit, [sings] "One bad apple don't spoil the whole bunch . . ." Well, it does, according to some business partners who say bobbing with Apple snapped their necks.

Take Don Cook. He spent four years marketing Mac products, first for Word-Perfect Corp.

"In that time I watched a lifetime's worth of mistakes, missed opportunities, masterful marketing and misinformation."

Cook helped relaunch WordPerfect for Macintosh. It did great — until Novell arrived. Novell obviously wasn't too high on Apple's antics, either, so it plucked the Mac division and sold it to Corel. Crunch!

Cook then joined a small Israeli Macintosh software company trying to build a U.S. presence. The company soon became an OpenDoc darling, shown off by

Apple at many internal and external briefings. Then Apple killed OpenDoc. Double crunch! Here's Cook again:

"The owners of our small company lost all confidence and belief in Apple and the Macintosh. They discontinued funding our efforts, and our company went out of business."

Cook says Apple has caused him much personal and professional unpleasantness.

Next slide, please.

{SLIDE: Enzo Torresi}

Anybody know this man? He's Enzo Torresi. Back in the 1980s, Torresi founded Business Land, a computer retail chain. His latest job is heading Power Computing Corp. He was too classy to bad-mouth Apple to me. But guess which major Mac clone maker suddenly finds itself a Wintel convert?

We don't have time to review it here, but please take the handout on your chairs. It's a recent column by syndicated columnist Reid Goldsborough. Let me read a couple of key sentences:

"Apple is in such dire straits largely because of the loyalty of Mac fanatics. Apple . . . with such a loyal user base, got complacent — even lazy. It felt that because the Mac was so much better than any PC on the market, customers would keep buying at inflated prices."

Goldsborough goes on to point out — correctly, I believe — that a healthy Apple is needed to loosen Microsoft's grip

on the industry's, um, Adam's apple.

Well, it's almost noon, so let's take a minute to pull all this together.

First, what will be the fate of AppleSoft? Do you like MicroApple better?

Will Apple follow Altair [scattered applause] in the Museum of Obsolete and Useless Computers?

{SLIDE: Altair 80}

Or will switching to direct, Internet-based sales help Jobs & Co. ring Dell's bells?

Industry analysts aren't sure what will happen. [Cry of "So, what else is new?" Laughter, hoots.] But let's face it, Apple and Macs aren't going anywhere, and neither are the devotees.

As MAC MAVN Scott Goldman asks: "When is Apple going to give me justification to defend them?"

There may be hope. Witness this E-mail from Jeff Wilson, a software engineer at TransCore, Inc., a division of San Diego-based Science Applications International Corp.

"Non-Mac computer users often assume that to choose the Mac, you'd have to be misinformed, crazy or a zealot. I am none of these. For 15 years I've been a professional pro-

grammer, using CP/M, DOS, Windows, Windows 95, NT, OS/2, NextStep and various flavors of Unix eight hours a day, five days a week. I use a Mac at home as my computing platform of choice. You do not have to have incredible amounts of loyalty, zealousness or courage to be a Mac user. It can be, simply, a rational decision."

I'd like to close with a moving message from Keith Feinstein. He is president of Electronics Conservancy, Inc. in Murray Hill, N.J., a creative firm that recently finished a museum exhibition on the history of video games (www.videotopia.com). I took the liberty of formatting his E-mail. I think you will find it as moving as I did.

Slide, please.

{SLIDE: Screen capture of a Mac affirmation (above), followed by 30 seconds of introspective silence.}

Ladies and gentlemen, that ends my planned presentation.

Questions? □

Maglitta is a freelance writer in Cambridge, Mass. His Internet address is jmaglitta@earthlink.net.

Can't live with 'em . . .
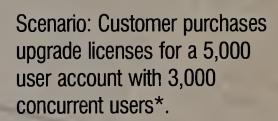
Here are some tips, harvested from some pretty smart people, that can help IS managers handle Mac Moonies in their organization.

■ Let them chew a while longer. If your Mac users aren't hurting anyone, let them be. Eventually, you may have to switch them to Wintel — let them enjoy the warm glow while it lasts.

■ Spit them out. If you need new systems or applications that run only on Windows, swallow hard, and do it. If you have some extra change, you can

buy Power Macs, which will let fans swing both ways. Otherwise, tell the True Believers you don't like this any more than they do. After all, you'll fork out plenty for new systems, software, training, etc.

■ Plant new seeds. A middle ground. If you know you'll be switching down the road, start tilling now. Stress obvious Wintel strengths such as cost and software base. Mac maniacs are a windy lot, so you'll have to decide how much discussion and debate you can stomach. — Joseph E. Maglitta

Microsoft cuts cost-saving licensing feature

Corel continues its commitment to concurrent licensing

Concurrent usage: the numbers speak loud and clear

Scenario: Customer purchases upgrade licenses for a 5,000 user account with 3,000 concurrent users*.	Corel® WordPerfect® Suite 8	Microsoft® Office 97	Your Savings
	$288,000	$855,000	$567,000

CLP
COREL LICENSE PROGRAM

Concurrent usage, a **no-charge** feature in the Corel License Program, saves you money and delivers cutting-edge software to *all* your employees.

Because concurrent usage allows you to purchase licenses for only the number of simultaneous users of an application, it's an important cost-saving for organizations—and part of Corel's commitment to offer flexible software solutions that make the most of your IT investment. In fact, three out of four Corel licensing customers take full advantage of the concurrent usage benefit.

Award-winning applications—including Corel® WordPerfect® and CorelDRAW™—together with comprehensive licensing options, boost employee productivity, reduce training and maintenance costs, and ease administration. Effectively lowering your total cost of ownership. Corel—smart business solutions for today's corporate environment.

Corel: Corporate Compatible

COREL®
www.corel.com

KUR-0534-US

For more information, please contact your local Corel® Authorized Reseller or visit www.corel.com.

As Good As New

Mark said, "I thought your old computer system was junk."

Judy said, "Not anymore! With 100% Pure Java,™ it works as good as new."

Mark said, "As good as new? You are lucky, Judy."

Judy said, "Yes. I am lucky. We are all lucky."

max·i·miz·es in·tra·net in·vest·ment

en·a·bles net·work com·put·ers

u·til·iz·es ex·ist·ing in·fra·struc·ture

Pure and Simple.

The New web jobs

by Leslie Goff

In a mere three years, the role of the webmaster has evolved at a rate that might astonish even Darwin.

Once a jack-of-all-trades position responsible for the graphic design, content, Hypertext Markup Language (HTML) programming, maintenance and updates of a World Wide Web site — not to mention the server hardware and software — the webmaster's job these days is much more specialized.

As electronic commerce, intranets and extranets have burst onto the scene demanding more and more technical expertise on top of creative skills, a plethora of new Web-related job titles has emerged. Director of media integration, Internet sales engineer and extranet database specialist are just a few of the new positions. Director of electronic commerce has recently gone from rare to commonplace in the blink of an eye.

Computerworld spoke with four of the new Web professionals about their roles, the skills required and how they see the future shaping up.

Goff is a freelance writer in New York.

Jim Hall

Director of media integration
Pseudo Programs, Inc., an online entertainment production company, New York
www.pseudo.com

WHAT THE TITLE MEANS: "The job is more of a production manager role. I'm in a funky place in the company because I deal with everyone on a daily basis — the 3-D animators, the art department, video graphics production, the Netcast engineers, the sound designers, the executive producers of the shows, the network administrators, the business development people, the software developers and the president [Josh Harris]. Basically, if we have a medium- to long-range project to be managed, it's my responsibility."

DAY-TO-DAY CHALLENGES: "Last night, I was up all night working on our new server. I purchase most of the equipment and make recommendations about what we should buy. For an upcoming show called "Galactic Pioneers: Journey to Curium," a sci-fi adventure program we shot here for RealVideo broadcast, I acquired the new gear, put the show on the schedule and established communication between all the parties involved. I storyboarded it and shot it. I also developed the software to drop ad blocks into the video stream — just like TV commercials. It's called Flow, and I wrote it using Macromedia's Director."

SKILLS REQUIRED: "You must be able to communicate well with the creative, technical and business people. You need a very broad and medium-range knowledge of a lot of different things: HTML, Java, [Virtual Reality Modeling Language], Macs and PCs, analog and digital production and art. And you need to know the language of each set of people. And attention to detail: God is in the details."

PERSONALITY REQUIRED: "You must have a voracious appetite for learning, and you have to think of [the job] as play. If you think of it as work, then you're in the wrong business. As an online entertainment company, we're caught between the bit-heads and the stars, and I get the best of both worlds. For years, I felt I had two competing sides of my personality — the day jobs and the night jobs — and now I get to pull them both together."

WHY I GOT THIS JOB: "I've done theater, film, radio, digital video. I know computers and the 'net. I'm getting a master's in interactive telecommunications [from New York University], and I went to film school. I was the traffic and production manager for an ad agency in college. I know how to talk to people when communication breaks down."

WHAT THE FUTURE HOLDS FOR THIS JOB TITLE: "This is a multithreaded, multitasking job. I don't think it will stay that way. It's like cells: They grow and grow, and then they start specializing. The jack-of-all-trades on the Web will likely last another year or two, but you can't maintain that professionally for long. Eventually, it grows beyond you, and you can't manage it anymore."

New web jobs

David Jenkins

Extranet database manager
IntraLinks, Inc., a developer of customized extranets for the financial services industry, New York
www.intralinx.com

WHAT THE TITLE MEANS: "I create the databases for our IntraLoan application, which automates large capital loans for corporate customers. They're syndicated loans: For example, say John Deere wants to borrow half a million dollars from J. P. Morgan, so Morgan gets other banks to join in. These have usually been managed by 'sneakernet.' [With IntraLoan], we create private extranets where these deals can be conducted. [For each deal], I set up a database with security features to grant granular access — the investor, the syndicate banks and the [loan] customer can each see only certain information."

DAY-TO-DAY CHALLENGES: "I do the database design, the graphics work and the access control. I develop internal applications. I deal with getting clients comfortable on the 'net. I work closely with the syndicate banks to get the documents I need for the database. A typical day is 8 a.m. to 6:30 p.m. or later. I'm also on a beeper 24 hours a day, 7 days a week. In addition to my regular duties, I put together training manuals and job descriptions, and I do some hiring. So there's a lot of behind-the-scenes work that is part of the job but not part of the job description."

SKILLS REQUIRED: "Lotus Notes Domino is the platform. You must understand the banks' networks . . . and the Internet, because we have a vast audience using different browsers and operating systems, and you must be able to troubleshoot on the phone. I use Photoshop for the database look-and-feel — you have to be familiar with GUI development. People skills are also key to the client contact. And you need the management skills to coordinate staff and get everyone on the same page."

PERSONALITY REQUIRED: "You need to be open to new experiences and have a can-do attitude. And you need to know what you don't know and where to go to get the information you need."

WHY I GOT THIS JOB: "This is my first salaried job in IS. I started taking computer courses [in 1996] at NextAge in Norwalk, Conn. They were mainly Notes-related courses, so I just seemed to be in the right place with the right company at the right time. I knew I wanted to be in an entrepreneurial Internet company. I've always been an entrepreneur. I've owned a deli and a video store. Both of those involved strong customer relations, which is also necessary in this job."

WHAT THE FUTURE HOLDS FOR THIS JOB TITLE: "As the technology of the Web becomes more pervasive, companies will need people who can communicate what's happening and how to take advantage of it. So, I see this position as one in greater and greater demand."

David Belson

Internet sales engineer
GTE Internetworking (formerly BBN Planet), a corporate and consumer Internet service provider, Cambridge, Mass.
www.bbn.com/homejava.htm

WHAT THE TITLE MEANS: "I'm the liaison between the customer and sales, engineering and operations — the domain expert for our services and what's going on in the industry. I do presales work for our Web hosting services, make recommendations and make sure the customer has a smooth implementation. I also work with our service line management as a field liaison, letting them know, 'Hey, three customers have requested this feature.' I do some postsales support and hand-holding."

DAY-TO-DAY CHALLENGES: "A typical Friday is 'Crisis at 4:30.' Some days are relatively quiet; I don't get a lot of calls and can get lots done. Other days, I spend six hours in product meetings [or] vendor meetings. Part of my job is evaluating new services — like saying, 'It looks great, but it will be a support nightmare.' I'm also working with our corporate intranet group to define the features and functionality."

SKILLS REQUIRED: "A lot of it is understanding the Web, connectivity and security. A big part is people skills — dealing with customers. Being able to deal with [customers] and to translate from their needs into what we offer and working with everyone else in the company to get it accomplished is a big part of it. You need to understand a customer's business and how we can use our services to solve their problems."

PERSONALITY REQUIRED: "A sense of humor is definitely one trait you need. If you're just always grinding away, the job will get old fast. You also need to focus and prioritize. You need to be open-minded and able to think outside the box. You need to be a problem solver."

WHY I GOT THIS JOB: "My first year here I was doing Web support. Web hosting was just getting off the ground. I had been on the 'net since 1993. So I would also do presales work with the salespeople. Then I would do a custom search engine for a customer. I would work with the operations person to do special requests for customers. And customers would call me directly when they had problems. . . . As a result of that year, the sales organization became more organized, and operations became more formalized, and we created the Internet sales engineer role."

WHAT THE FUTURE HOLDS FOR THIS JOB TITLE: "As [Internet service providers] widen their service offerings and as connectivity and security get more complex, they will need more people who can speak to customers about how the services fit their needs. You can't expect salespeople to know all the bits and bytes and protocols."

Barbara Jessen-White

Director of electronic commerce*
Tech Data Corp., an electronic components and software distributor, Clearwater, Fla.
www.techdata.com

WHAT THE TITLE MEANS: "I manage the planning of our strategic E-commerce initiatives. I oversee four groups: Program Management, which manages the tools and programs we offer customers; Interchange Services, which consults with customers to get their systems and ours to work together; Implementation Support, which does the [electronic data interchange] transaction tests and provides tech support; and Communications, which creates and manages our warehouse, detailing product availability and technical specs."

DAY-TO-DAY CHALLENGES: "It's a great combination of technology and business. I work with our developers on implementations and rolling out new technologies on the Web. I help the program managers remove roadblocks and get their job done. I interface with sales and resellers to understand what their needs are and what our direction should be."

SKILLS REQUIRED: "The most critical is maintaining the right balance of business and technical skills — understand the technology that's driving business and the business needs that must be fulfilled. You need a strong customer-service orientation because these tools are your face to the outside world."

PERSONALITY REQUIRED: "You need to be analytical because you have to delve into the needs and problems of your customers. The ability to multitask is critical — E-commerce is a fast-paced environment because both the business and technology are always changing. You must think strategically and be able to focus on the next six months, year, two years. And you must have patience because you have lots you want to achieve, and there are always delays."

WHY I GOT THIS JOB: "I have an MBA and did my fair share of programming over the years. I joined the company in '91 as a programmer/analyst, and I worked on one of our first electronic catalogs and an online ordering system with an online catalog. As a result, I became an E-commerce manager."

WHAT THE FUTURE HOLDS FOR THIS JOB TITLE: "There will be significant demand, especially in industries where margins are shrinking and the cost of doing business needs to be better managed. E-commerce will be critical and companies will need a strong person to lead their initiatives. Also, it's growing globally, so the position will grow worldwide."

(*Since this interview, and just prior to publication, Jessen-White took a new position as vice president of electronic commerce at ECWerks, Inc. in Tampa, Fla.)

REGIONAL SCOPE
New York & Northern New Jersey

If you can make it there ...

(AND FIND AN APARTMENT WITH REASONABLE RENT IN A DECENT NEIGHBORHOOD)

BY LESLIE GOFF

KEVIN STEVENS, 28, and his fiancee wanted to return to metropolitan life. Both come from large cities — he is from Los Angeles, and she is from Seoul, South Korea. They spent several years in Baton Rouge, La., where he was a LAN administrator at the Louisiana State University (LSU) library. They knew that for a dual-career couple, a large city would offer the best employment prospects.

The couple journeyed to New York, where Stevens is now manager of computer systems at the Pratt Institute Libraries in Brooklyn. Following are some lessons he learned about relocating to the city that never sleeps.

MINING THE OPPORTUNITIES
"It was all done via the 'net," Stevens says of his New York job hunt. He E-mailed his resume in response to Pratt's posting in a Usenet newsgroup. Pratt responded in two days and flew him up for an interview. The offer came a few days later.

Finding an information systems position in New York can take two weeks to three months, says Marc Lewis, a New York-based partner in the Cleveland-based executive search firm Christian and Timbers. Top jobs include World Wide Web developer, Java programmer, electronic-commerce specialist and database developer/administrator. "Financial services is the big gorilla," Lewis says.

THE INTERVIEW
Pratt paid for Stevens' airline ticket but offered no assistance with his reservations or accommodations. The interview, including a campus tour and lunch, lasted only four hours. "It was very compressed," Stevens says. Lewis says prospective New Yorkers should do their homework before interviewing: "Nothing will turn off an employer faster as when the candidate doesn't know anything about the company."

THE SKILLS THAT GET THE JOB
Stevens' networking experience sealed the deal. Pratt is implementing a solution he outlined in the interview: setting up proxy servers to deal with the assignment of IP addresses. Additionally, at LSU he supported 150 staff members and 75 public workstations compared with 25 staff members and seven public workstations at Pratt.

NEGOTIATING THE RELOCATION
Stevens had to pay for his entire relocation. "They said it was against [Pratt's] policy," he says. But he negotiated: "They put me on the payroll a week before I actually started working." The total cost of his move was close to $6,500.

THE SALARY
Stevens makes 25% more than in Baton Rouge but has less cash in his pocket "after the higher taxes and the much higher cost of living," he says, adding that academic computing doesn't pay as well as corporate IS. One trade-off: Stevens' contract specifies a 35-hour workweek; in the corporate sector many IS professionals are expected to arrive early, stay late and wear a beeper 24 hours per day, seven days per week.

STREETS OF GOLD		
IS salaries in New York and Northern New Jersey are typically much higher than average, but there can be a high personal price to pay		
Job title	**N.Y. & N.J. total compensation**	**National average**
Chief information officer	$152,000	$123,000
Director of systems development	$116,000	$82,000
Director of networks	$99,000	$74,000
Project manager, systems & programming	$87,000	$67,000
Manager of voice and data communications	$83,000	$66,000
Database manager	$80,000	$61,000
Senior systems programmer	$72,000	$56,000
Systems analyst	$71,000	$51,000
Computer operations manager	$68,000	$56,000
Webmaster/Web designer	$66,000	$51,000
Systems programmer	$60,000	$49,000

FINDING AN APARTMENT
Stevens followed what little advice he could get and started his apartment hunt in the real estate offices of Brooklyn's Park Slope area. In one weekend, he visited more than a dozen brokers and looked at 15 apartments.

"At least 80% of the agents pressured me to give them a decision on the spot," he says. "But I waited until I had seen them all, and I was still able to get my first choice." Stevens now forks over $900 more per month in rent.

LIFE ON THE JOB
Stevens' position still has a few kinks. He doesn't have a real office yet — just a desk in the closet-like server room. He still has no workstation. It took two weeks to get voice mail. The job entails user support, designing an intranet, working on the Web site, organizing databases and supporting the library's Unix-based integrated library system, which handles core library functions. Users are considerably more demanding at Pratt than at LSU, he says: "People call up with small problems, they accost me in the halls, and they expect me to fix things on the spot."

Are New York users always so demanding? "Do sharks have teeth?" Lewis quips. "You have to learn to talk 120 miles per hour. You need a forceful verbal communication style that includes direct eye contact and making a connection with other people. And you have to learn to listen fast, too."

THE LAST WORD
"If you find a good job, there's nothing to stop you," Stevens advises other IS professionals. "Try to get as much sympathy as possible — in the form of cash — from prospective employers. Also, [seek out] advice and support, because it's not easy to pack up and move anywhere, and this is one of the most challenging living environments. But if you have a grudge against New York and you haven't even checked it out, you're just shooting yourself in the foot." □

@ COMPUTERWORLD
There's much more to the story of Kevin Stevens' journey to New York than we could share here. For the rest of his story, visit our Web site at:
www.computerworld.com

Goff is a freelance writer in New York.

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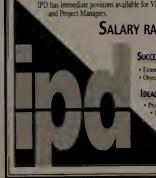
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* Internet/ Intranet Select Edition

The Week in Stocks

Gainers 👍   Losers 👎

PERCENT

Gainers	
Cognos Inc.(L)	28.0
Ascend Communications(L)	23.2
Madge Networks NV	18.5
Shiva Corp.(L)	17.5
Sun Microsystems Inc.	16.2
Intuit Inc.	15.5
Stratus Computer Inc.	15.3
Racotek Inc.	15.0

Losers	
Pinnacle Micro Inc.(L)	-46.2
General Datacomm Inds.(L)	-35.5
Cabletron Systems(L)	-34.0
Creative Technology Ltd.	-22.3
Adaptec Inc.	-19.4
Netrix Corp.(L)	-19.0
Exabyte(L)	-15.0
Applix Inc.	-14.4

DOLLAR

Gainers	
America On-Line	10.75
Dell Computer Corp.	9.25
Northern Telecom Ltd.	7.56
Computer Sciences(H)	7.44
Sun Microsystems Inc.	5.81
BMC Software Inc.	5.75
Ascend Communications(L)	5.66
Hewlett Packard Co.	5.38

Losers	
Adaptec Inc.	-9.63
Cabletron Systems(L)	-8.06
Creative Technology Ltd.	-6.00
Digital Equipment Corp.	-5.44
Hyperion Software Corp.	-4.44
National Semiconductor	-3.19
Lattice Semiconductor	-2.25
Texas Instruments	-2.25

INDUSTRY ALMANAC

Cisco stock scores

Among high-tech stocks, analysts consistently point to Cisco Systems, Inc. in San Jose, Calif., as a clear winner.

"It's basically one of the best, if not the best, company in the computer networking marketplace," says Wendy Abramowitz, an analyst at Argus Research Corp. in New York.

Abramowitz and Noel Lindsay, an analyst at DMG Technology Group in San Francisco, both give the stock a Buy rating and predict a 65% jump in earnings per share by the end of the company's fiscal year next July.

Earnings per share were $1.52 for its fiscal year ended July 26, compared with $1.37 for the previous year. Abramowitz predicts earnings will increase by next July to $2.60 per share; Lindsay's prediction is $2.62 per share.

"In terms of the fundamental positioning of the company, there is none better, and their stock is relatively low risk and will likely appreciate," Lindsay says.

Lindsay predicts revenue will be $8.43 billion at the end of the current fiscal year, up from $6.4 billion last fiscal year.

Cisco continues to roll out products that win the support of the market, and it has made a series of acquisitions to stay active in hot new areas. Half of the 19 companies it acquired since 1993 were acquired in the 1997 fiscal year and include Dagaz, a subsidiary of Integrated Network Corp. in Bridgewater, N.J.
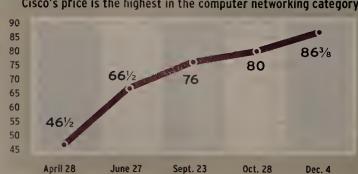
Dagaz has helped Cisco enter the Digital Subscriber Line market, which allows high-speed data transmission over existing copper telephone lines.

One event on the horizon that may cause investors worry is the impact of falling stock prices in Asia. But Cisco is somewhat protected because it has not invested heavily in Asian markets, analysts say.

— Matt Hamblen

NETWORKING CHAMPS

Cisco's price is the highest in the computer networking category

46½ · 66½ · 76 · 80 · 86⅜

April 28   June 27   Sept. 23   Oct. 28   Dec. 4

Communications and Network Services — OFF 0.41%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
COMS	81.38	24.00	3 COM Corp.	36.50	2.13	6.2
AIT	81.25	54.75	Ameritech Corp. (H)	77.19	1.44	1.9
ASND	80.25	22.00	Ascend Communications (L)	30.06	5.66	23.2
T	58.50	30.75	AT & T (H)	57.88	1.88	3.3
BNYN	6.50	1.19	Banyan Systems Inc.	3.50	0.25	7.7
BAY	41.88	15.38	Bay Networks Inc.	28.94	-1.06	-3.5
BEL	90.69	56.75	Bell Atlantic Corp. (H)	90.06	1.19	1.3
BLS	57.50	36.75	Bellsouth Corp.	55.44	0.56	1.0
BRKT	32.25	9.25	Brooktrout Technology	10.75	0.75	6.5
CS	46.50	14.38	Cabletron Systems (L)	15.63	-8.06	-34.0
CGRM	21.88	8.63	Centigram Communications	16.69	1.19	7.7
CSCO	90.88	45.25	Cisco Systems Inc. (H)	88.50	3.44	4.0
CMNT	7.00	3.31	Computer Network Tech.	4.00	0.00	0.0
DIGI	32.75	16.13	DSC Communications	23.38	0.75	3.3
FORE	39.88	10.00	FORE Systems Inc.	19.13	1.63	9.3
GDC	12.38	3.75	General Datacomm Inds. (L)	3.75	-2.06	-35.5
GSX	53.00	36.13	General Signal Networks	40.69	0.13	0.3
GTE	52.25	40.50	GTE Corp.	49.19	-0.06	-0.1
LU	90.75	44.75	Lucent Tech.	80.31	-0.75	-0.9
MADGF	16.13	4.50	Madge Networks NV	6.00	0.94	18.5
MCIC	44.81	27.31	MCI Commmunications Corp. (H)	44.81	1.31	3.0
NETM	8.44	2.50	NetManage Inc.	2.53	-0.34	-12.0
NTRX	7.00	0.94	Netrix Corp. (L)	1.06	-0.25	-19.0
NCDI	16.25	7.00	Network Computing Devices	7.44	-0.88	-10.5
NWK	22.38	11.25	Network Equipment Tech.	14.31	-0.19	-1.3
NN	69.38	27.25	Newbridge Networks Corp.	42.94	0.69	1.6
NT	113.88	57.75	Northern Telecom Ltd.	96.81	7.56	8.5
NOVL	13.00	6.28	Novell Inc.	8.47	-0.84	-9.1
ODSI	19.25	7.00	Optical Data Systems Inc. (L)	7.88	-0.81	-9.4
PCTL	31.25	7.75	Picturetel Corp.	7.75	-1.00	-11.4
PTON	4.00	1.31	Proteon Inc.	1.56	-0.06	-3.8
RACO	5.38	1.00	Racotek Inc.	1.44	0.19	15.0
RETX	9.25	3.38	Retix	4.81	0.06	1.3
SBC	75.13	48.50	SBC Communications (H)	72.69	0.06	0.1
SFA	24.94	14.25	Scientific Atlanta Inc.	19.50	-0.56	-2.8
SHVA	43.88	8.13	Shiva Corp. (L)	10.50	1.56	17.5
FON	60.63	37.50	Sprint Corp. (H)	57.88	-0.81	-1.4
SMSC	18.13	8.25	Standard Microsystems Corp.	10.50	-0.13	-1.2
USW	46.13	30.38	U S West Inc. (H)	45.75	0.69	1.5
XIRC	31.13	7.50	Xircom	10.88	0.31	3.0
XYLN	39.00	12.38	Xylan Corp.	21.75	1.31	6.4

PCs and Workstations — UP 4.79%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
AAPL	29.56	12.75	Apple Computer Inc.	15.75	-1.88	-10.6
CPQ	79.56	28.50	Compaq Computer Corp.	64.63	2.94	4.8
DELL	103.88	25.00	Dell Computer Corp.	92.56	9.25	11.1
GTW	46.25	19.38	Gateway 2000 Inc.	28.88	0.50	1.8
HWP	72.94	48.13	Hewlett Packard Co.	66.13	5.38	8.8
MUEI	25.38	10.25	Micron International Inc.	10.94	-0.13	-1.1
NIPNY	74.00	48.63	NEC America	52.38	0.00	0.0
SGI	30.31	14.25	Silicon Graphics	14.88	1.63	12.3
SUNW	53.31	25.50	Sun Microsystems Inc.	41.75	5.81	16.2

Large Systems — UP 0.29%

| Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
DGN	37.94	13.63	Data General Corp.	18.00	0.00	0.0
DEC	53.81	25.00	Digital Equipment Corp.	44.00	-5.44	-11.0
IBM	113.31	63.63	IBM (H)	111.25	2.50	2.3
MDCD	7.88	2.88	Meridian Data Inc.	3.94	-0.19	-4.5
PRCM	20.13	9.00	ProCom Technology, Inc.	15.56	0.00	0.0
SQNT	31.25	14.50	Sequent Computer Sys.	21.50	-2.19	-9.2
TEXM	6.00	2.06	Sequoia Systems Inc.	5.13	0.56	12.3
SRA	60.75	25.38	Stratus Computer Inc.	37.13	4.94	15.3
UIS	16.50	5.75	Unisys Corp.	14.25	-0.38	-2.6

Software — UP 0.89%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
ADBE	53.13	32.50	Adobe Systems Inc.	41.00	-1.00	-2.4
AMSWA	15.63	5.06	American Software Inc.	9.63	0.19	2.0
APLX	26.50	3.13	Applix Inc.	5.19	-0.88	14.4
ARSW	53.25	17.00	Arbor Software	32.75	1.38	4.4
ADSK	51.13	25.25	Autodesk Inc.	40.00	1.44	3.7
BGSS	38.00	23.00	BGS Systems Inc.	36.00	1.75	5.1
BMCS	70.13	39.63	BMC Software Inc.	70.13	5.75	8.9
BOOL	35.25	19.25	Boole and Babbage	29.56	-0.06	0.2
BORL	12.19	5.38	Borland Int'l Inc.	10.19	0.06	0.6
BOBJY	16.75	6.63	Business Objects	11.06	-0.50	-4.3
CAYN	6.25	2.00	Cayenne Software Inc.	2.38	-0.06	-2.6
CNTR	5.88	1.13	Centura Software	1.69	0.00	0.0
CHKPF	50.50	15.63	Checkpoint Software	47.13	0.88	1.9
COGNF	38.50	17.63	Cognos Inc. (L)	22.88	5.00	28.0
CA	55.38	24.88	Computer Associates	55.38	3.58	6.9
CVN	10.00	1.94	Computervision Corp.	3.94	0.25	6.8
CPWR	38.13	12.06	Compuware Corp.	37.25	2.38	6.8
CSRE	18.88	4.25	Comshare Inc. (L)	6.88	0.63	10.0
COSFF	8.25	2.06	Corel Corp. (L)	2.16	-0.31	-12.7
DWTI	6.63	2.25	Dataware Technologies Inc.	3.00	-0.19	-5.9
FILE	36.50	9.50	Filenet Corp.	29.56	2.09	7.6
FRTE	40.00	7.25	Forte Software	9.94	-0.06	-0.6
FTPS	8.38	1.75	FTP Software Inc. (L)	2.09	-0.25	-10.7
HUMCF	54.25	22.00	Hummingbird Comm. Ltd.	33.00	-0.75	-2.2
HYSW	46.00	13.00	Hyperion Software Corp.	38.75	-4.44	-10.3
IRIC	20.00	11.38	Information Resources	14.50	-0.44	-2.9
IFMX	27.63	5.63	Informix Corp. (L)	6.13	-0.84	-12.1
INGR	14.19	6.25	Intergraph Corp.	10.69	0.19	1.8
LEAF	3.97	0.81	Interleaf Inc. (H)	3.75	0.13	3.4
ISLI	18.50	6.25	Intersolv Inc.	16.94	1.25	8.0
INTU	37.00	20.88	Intuit Inc.	34.38	4.63	15.5
TLC	20.50	5.50	Learning Co. (The)	17.88	0.06	0.4
LGWX	12.88	4.13	Logic Works	8.25	-0.13	-1.5
MAPS	14.25	7.88	MapInfo Corp.	13.13	-0.13	-0.9
MATH	5.13	2.19	MathSoft	3.44	0.19	5.8
MENT	13.13	6.50	Mentor Graphics	9.50	-0.31	-3.2
MIFGY	39.13	14.00	Micro Focus	35.50	2.00	6.0
MGXI	10.63	4.00	Micrografx Inc.	9.75	0.38	4.0
MSFT	150.75	74.13	Microsoft Corp.	143.38	2.50	1.8
OBJS	3.13	0.56	ObjectShare, Inc. (L)	0.63	0.00	0.0
ORCL	42.13	22.50	Oracle Corp	31.19	-1.94	-5.8
PMTC	64.25	37.50	Parametric Technology	49.38	-0.94	-1.9
PSFT	71.38	30.63	Peoplesoft (H)	71.38	5.00	7.5
PTEC	19.75	11.00	Phoenix Technologies	14.31	-0.44	-3.0
PSQL	13.75	6.50	Platinum Software	8.31	0.44	5.6
PLAT	28.88	10.25	Platinum Technology	27.88	2.41	9.4
PRGS	25.25	12.63	Progress Software Corp.	20.00	-0.06	-0.3
RNBO	28.13	13.75	Rainbow Technologies Inc.	24.50	0.00	0.0
REDB	26.50	5.00	Red Brick Systems Inc.	7.38	0.13	1.7
ROSS	9.75	1.75	Ross Systems, Inc.	3.31	-0.31	-8.6
SAPE	61.00	30.00	Sapient Corp	53.50	1.25	2.4
SCOC	8.63	3.13	SCO Inc.	5.00	-0.81	-14.0
SDTI	44.38	21.00	Security Dynamics Tech.	34.69	-0.19	-0.5
SOTA	17.63	8.88	State of the Art	16.88	2.00	13.4
SSW	40.19	27.25	Sterling Software Inc. (H)	40.19	3.63	9.9
SDRC	30.00	16.50	Struct. Dynamics Research (L)	16.63	0.88	-5.0
SYBS	23.63	12.13	Sybase Inc.	13.94	-0.94	-6.3
SYMC	27.13	12.00	Symantec Corp (H)	26.25	0.81	3.2
SNPS	46.50	21.75	Synopsys	43.13	2.06	5.0
SSAX	17.63	3.88	System Software Assoc.	14.88	1.41	10.4
SYSF	19.38	6.00	Systemsoft Corp.	6.63	-0.31	-4.5

Internet — UP 1.76%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
AMZN	66.00	15.75	Amazon.com	53.00	1.03	2.0
AOL	91.13	31.00	America On-Line	84.13	10.75	14.7
ATHM	30.63	16.63	At Home Corp.	22.50	2.84	14.5
CSRV	14.56	8.88	Compuserve Corp.	13.56	0.88	6.9
EDFY	22.13	8.88	Edify Corp.	15.88	-1.59	-9.1
XCIT	35.00	7.50	Excite, Inc.	24.56	-0.94	-3.7
SEEK	14.50	4.38	Infoseek Corp.	10.94	-0.25	-2.2
LCOS	42.00	10.38	Lycos Inc.	31.00	0.13	0.4
NETC	21.88	7.88	Netcom On-Line	20.25	0.19	0.9
NSCP	65.00	23.50	Netscape Comm. Corp.	29.69	1.44	5.1
OMKT	17.75	6.50	Open Market Inc.	11.38	1.31	13.0
PSIX	14.00	5.50	PSINet	6.44	0.25	-3.7
QDEK	6.38	1.75	Quarterdeck Corp.	1.81	-0.09	-4.9
RAPT	25.00	8.88	Raptor Systems	13.06	-2.00	-13.3
SCUR	14.81	4.75	Secure Computing Corp.	12.94	0.50	4.0
SPYG	18.88	6.00	Spyglass Inc.	7.25	-0.28	-3.7
YHOO	58.63	11.19	Yahoo! Inc.	55.50	4.63	9.1

Semiconductors — OFF 2.74%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
AMD	48.50	2.69	Advanced Micro Devices	21.50	-0.19	-0.9
ADI	36.69	20.63	Analog Devices Inc.	29.69	-1.38	-4.4
CHPS	22.75	7.88	Chips and Technologies	15.38	-0.03	-0.2
CRUS	21.38	8.00	Cirrus Logic	12.69	-0.69	-5.1
CY	18.94	10.00	Cypress Semiconductor Corp.	10.00	-0.94	-8.6
INTC	102.00	61.75	Intel Corp.	77.75	0.94	1.2
LSCC	74.50	38.75	Lattice Semiconductor	54.25	-2.25	-4.0
LSI	46.88	18.63	LSI Logic Corp.	22.44	-1.00	-4.3
MCRL	46.88	12.25	Micrel Semiconductor Inc.	33.25	-1.19	-3.4
MU	60.06	22.06	Micron Technology	25.44	0.19	0.7
MOT	90.50	51.50	Motorola Inc.	62.44	-2.19	-3.4
NSM	42.88	21.63	National Semiconductor	29.69	-3.19	-9.7
TXN	71.25	30.50	Texas Instruments	46.44	-2.25	-4.6
VLSI	38.69	14.88	VLSI Technology	22.00	-0.69	-3.0
XLNX	58.50	28.50	Xilinx	36.88	2.44	7.1
ZLG	29.50	17.00	Zilog Inc.	18.88	-0.25	-1.3

Peripherals and Subsystems — OFF 6.18%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
ADPT	54.25	30.13	Adaptec Inc.	40.00	-9.63	-19.4
APCC	33.25	15.25	American Power Conversion	31.25	0.50	1.6
CREAF	29.38	7.00	Creative Technology Ltd.	20.88	-6.00	-22.3
RACE	24.50	3.50	Data Race Inc. (L)	4.69	0.19	-3.8
DTM	12.50	7.38	Dataram Corp.	8.00	-0.63	-7.2
EMC	32.56	14.44	EMC Corp.	29.50	-1.38	-4.5
EMLX	21.25	14.13	Emulex Corp.	15.81	0.06	0.4
ESCC	35.88	22.00	Evans and Sutherland	30.75	0.25	0.8
EXBT	17.50	8.25	Exabyte (L)	8.50	-1.50	-15.0
IISLF	2.63	0.94	Intelligent Info. Systems	1.19	0.00	0.0
IOM	33.50	14.13	Iomega Corp. (H)	31.88	-0.25	-0.8
IPLS	2.81	0.94	IPL Systems Inc.	1.63	0.06	4.0
KMAG	36.75	15.31	Komag Inc.	18.75	-1.63	-8.0
MTSI	34.88	17.13	Micro Touch Systems Inc.	23.00	1.94	9.2
MTIC	17.88	2.25	MTI Technology Corp.	13.25	-0.44	-3.2
PNCLE	7.81	0.19	Pinnacle Micro Inc. (L)	0.22	-0.19	-46.2
AQM	23.06	2.38	QMS Inc.	2.75	-0.38	-12.0
QNTM	43.25	12.88	Quantum Corp.	25.50	-1.69	-6.2
RDUS	0.84	0.19	Radius Inc.	0.38	0.00	0.0
SEG	56.25	22.00	Seagate Technology	22.44	-0.13	-0.6
SOS	19.63	6.13	Storage Computer Corp. (L)	6.25	-0.75	-10.7
STK	67.00	33.25	Storage Technology (H)	63.88	-1.13	-1.7
TEK	46.44	31.63	Tektronix Inc.	41.50	-0.19	-0.4
WDC	54.75	18.00	Western Digital Corp. (L)	18.00	-2.25	-11.1
XRX	88.00	48.50	Xerox Corp.	77.63	2.00	2.6

Services — UP 2.82%

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
AMSY	35.38	15.75	American Mgmt. Systems	23.50	0.50	2.2
ANLY	34.38	14.25	Analysts Int'l (H)	34.00	2.48	7.9
AUD	58.25	26.56	Auto Data Processing	55.88	-0.56	-1.0
BDMI	29.75	19.75	BDM International Inc.	29.28	0.03	0.1
CATP	41.38	21.25	Cambridge Tech. Partners	40.00	1.38	3.6
CEN	47.63	29.50	Ceridian Corp.	45.25	1.56	3.6
CDO	34.00	18.38	Comdisco Inc.	32.56	2.69	9.0
CPU	38.00	13.25	CompUSA Inc. (H)	36.31	-0.19	-0.5
CHRZ	45.63	16.75	Computer Horizons	32.38	-0.44	-1.3
CSC	86.75	57.88	Computer Sciences (H)	85.63	7.44	9.5
TSK	49.38	16.63	Computer Task Group	30.75	-0.81	-2.6
EGGS	11.13	3.63	Egghead Discount Software	7.81	0.69	9.6
EDS	49.63	29.56	Electronic Data Systems Corp.	41.19	3.19	8.4
ICO	40.63	19.75	Inacom Corp.	31.00	2.56	9.0
INEL	8.75	2.25	Intelligent Electronics	5.00	-0.06	-1.2
KEA	39.00	12.38	Keane Inc.	32.44	0.44	1.4
MICA	29.75	12.31	MicroAge Inc.	21.13	0.00	0.0
PAYX	45.38	25.63	Paychex	41.13	0.25	0.6
PMS	68.06	40.13	Policy Management Sys. (H)	66.56	3.38	5.3
REY	30.63	13.75	Reynolds and Reynolds	18.94	-0.19	-1.0
SCBI	22.25	10.69	SCB Computer Tech. Inc.	18.25	-0.50	-2.7
SEIC	44.50	18.75	SEI Corp.	42.56	0.81	1.9
SMS	66.81	36.75	Shared Medical Systems	62.38	1.63	-2.5
SSPE	33.50	10.00	Software Spectrum Inc.	13.50	-0.25	-1.8
SDS	28.56	18.50	Sungard Data Systems (H)	28.56	2.63	10.1
VST	28.13	6.50	VanStar Corp.	14.00	0.75	5.7

Internet section (right upper):

Exch	52 Week Range		Company	Dec. 5 2 PM	Wk Net Change	Wk Pct Change
TRUV	5.19	1.50	Truevision Corp.	3.00	-0.38	-11.1
VIEW	27.88	9.63	ViewLogic Systems (H)	27.88	1.69	6.4
VMRK	11.75	5.75	VMark Software Inc.	8.63	-0.25	-2.8
WALK	18.25	10.50	Walker Interactive Systems	12.88	-0.13	-1.0
WALL	29.13	13.75	Wall Data Inc.	16.31	-0.13	-0.8
WANG	25.00	16.00	Wang Laboratories Inc.	21.88	-0.47	-2.1

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

Netscape to focus on E-commerce services

▶ *Co-founder Marc Andreessen says company also will mature as enterprise player in 1998*

Computerworld senior editor Carol Sliwa interviewed Marc Andreessen, Netscape Communications Corp.'s co-founder, last week in Paris at the company's first European Developer Conference.

CW: Describe Netscape's major accomplishments during the past year.

ANDREESSEN: We went to about 100% growth year to year in the business, about a 100% growth in employees. Research and development is a thousand people now, which is just mind-boggling. Just three and a half years ago, it was like six. And our sales and service organization worldwide is very close to 1,500 people. So we're able to operate on a much bigger scale.

CW: What about disappointments?

ANDREESSEN: I guess the one thing you could probably point to would be the stock price.... I don't know what else. I always wish we could ship products sooner with more features and higher quality.

CW: If you had to characterize the past year like a Chinese new year — Year of "Blank" — what would you call it?

ANDREESSEN: I would call it the Year of Solidification, the year of Netscape's solidification as a business and as a company.

CW: What about next year?

ANDREESSEN: Every CIO we talk to has two questions, right? One is the year 2000, which we

"Netscape's going to do fine if Java fails. But that said, Java's going to succeed, so we're doing a lot of stuff around Java."
— Marc Andreessen, Netscape

can help with but can't directly solve. And the other is, how do I either sell a huge amount of stuff to businesses or a huge amount of stuff to consumers, and how do I really streamline, automate and take online my relationship with suppliers and distributors and get all this stuff flowing the way it should over these networks.

CW: From a business-to-business perspective, how do you see the World Wide Web progressing?

ANDREESSEN: Quite rapidly. A lot of the foundation technologies that the Web has provided, including secure messaging, se-

curity, directories, are now being exploited in business-to-business electronic commerce.

CW: Are there gaps in your product line that you have to fill?

ANDREESSEN: If anything, the big opportunity for us might be in figuring out ways to bolster our service infrastructure even more than on the product side. If we could grow our professional services organization from 250 people to 600 or 800 people three months from now, that might be a really good thing.

CW: Do you think that is a realistic expectation?

ANDREESSEN: In this space, none of the big systems integrators or consulting companies are really paying attention to this right now. They're all too busy doing year 2000 or SAP rollouts.

CW: On what fronts do you see the battle lines being drawn against Microsoft Corp., moving forward?

ANDREESSEN: [On] a couple different fronts. For the infrastructure, the market is sort of segmenting into Microsoft's vertical integration approach — very much like IBM's in the '60s — and what we think is our very horizontal approach. Microsoft's approach is where everything works if you have the latest version of everything in the Microsoft technology stack. And you're expected to use only that, and anything else you're expected to throw away.

In our horizontal approach, we'll run on whatever the customer has. On the application space, again, it's very much Microsoft, to the extent they approach this market. I think it's going to be very shrink-wrap. Our approach is going to be to provide much higher value application functionality and to provide many more services wrapped around it.

CW: What do you feel are your biggest advantages over Microsoft?

ANDREESSEN: We're not them. Another advantage is we are able to offer a product set and a service set that is unencumbered. We're growing off of

a smaller base, we don't have an operating system franchise we have to protect; we don't have to drive [operating system] upgrade cycles.

CW: How important is the outcome of the Department of Justice's case against Microsoft in terms of your future strategy?

ANDREESSEN: It's not a big part of our future strategy one way or the other. We're building our business in a way that's independent of that kind of thing.

CW: How important is browser market share, going forward?

ANDREESSEN: Not terribly. It was a wedge into the market.

CW: Do you really think you can bet your company's future on Java?

ANDREESSEN: I wouldn't say that we are. I think Netscape's going to do fine if Java fails. But that said, Java's going to succeed, so we're doing a large amount of stuff around Java.

CW: Netscape has been trying to project itself as an important enterprise player. What do you think you need to do to make a convincing case during the coming year?

ANDREESSEN: Keep on doing what we're doing. Our customers seem to take us seriously. They seem to be buying the products. They seem to be implementing them. So we need to keep on going. Frankly, we need to get older. □

Pure Java eludes Netscape

gator, which will be designed to run on network computers from Sun and IBM.

Communicator 6.0 will ship late in 1998, "with a little luck," Andreessen said, and will be a mix of Java, C and C++. "We'll get there eventually," Andreessen said of the conversion to Java code. "We're just probably not going to get there in Communicator 6."

IS IT FEASIBLE?

Netscape's difficulty moving its applications to Java, combined with the problems Corel Corp. has had coming up with a Java-based suite of office productivity tools, raises the question of

whether, as a practical matter, enterprisewide applications can be written in Java.

But Jeff Kinz, an analyst at International Data Corp. in Framingham, Mass., said, "This just shows how we don't think clearly about software. With Netscape and Corel, these are large, sophisticated applications. Of course, it's going to take some time to rebuild it in Java.

"When these applications are finally built with Java, they will be higher-quality software. The language is designed so that the opportunity to introduce defects into the code is much smaller," Kinz added.

And Andreessen said Net-

scape remains committed to the Pure Java version of Communicator. "It's purely a matter of practicality as to what to do in C and C++ and what to do in Java. We have a lot of existing C and C++ code, and we're not going to throw it all out all at once."

PAIN RELIEF

Building a pure Java client, which includes messaging, browser, collaboration and Web composing, is important to Netscape because theoretically the client could run on all platforms, thereby easing headaches that Netscape currently suffers in porting the client to 16 different operating systems.

It is important to developers, too. Netscape has had to delay support for several key features in the Java Development Kit (JDK) 1.1, in part because of porting difficulties. Java programmers rely on JDK support in browsers so that their applications will run properly.

"Having a Java client is going to help [Netscape] keep up with

the JDK releases on the desktop because all of the people working on all of their different desktop platforms will now be able to focus on one version," said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

Another key benefit of a Java client is the software distribution mechanism it would enable, Sloane added. □

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COMMENTARY

What ever happened to push?

David Coursey

Push is dead. Just ask anyone. This, of course, means "push" is almost ready to become a business tool. I was thinking about this as I packed my bags for Internet World. Why anyone would hold a trade show in New York in December, I don't know, but I was packing anyway — warm stuff.

And in a pocket of a heavy coat — unworn since last year — were some business cards from push technology companies. One card was from BackWeb, another from Marimba, others I don't remember.

That's what happened to push: a big deal last year and no deal today. Back then, everyone was talking push. And why not? All they were describing was a client that asked the server for information at specified times, giving the appearance that the server was delivering information itself. You could build this faux-push in your sleep — and from looking at the implementations, many companies did.

At one point, I could name about 30 companies with push as a significant part of their claim to fame. A big part of that was the appeal of creating a "media company" rather than just another computer business. Anyone with access to content and a yearning to be the next America Online or PointCast seemed to get into the push business. Almost all failed, and the jury's still out on the others. The only winner — truly a new media company — was PointCast.

Today, if people talk about push at all, it's usually described as Electronic Software Distribution, not as an information delivery mechanism. That's where both Marimba and BackWeb ended up. Marimba started in software delivery and tried to become a content delivery company, while BackWeb started with content channels and now is happy to deliver anything anybody will pay to have delivered. Or do I have that reversed? Strategies have changed so often it's hard to keep track.

This is also the territory of companies such as Tibco that promote true messaging-based push. If you need critical information delivered, this approach is the way to go. What I call consumer push — the delivery of news and information to user desktops, usually supported by advertising — has become the territory of three companies: PointCast, Microsoft and Netscape.

Both Microsoft and Netscape want customers to create push content to be delivered to their browsers/desktops. PointCast was first with that, offering a server that both reduced Internet traffic and let companies create their own channels. The company now is building industry-specific implementations, which will also support an internal channel. Indeed, Microsoft FrontPage 98 and PointCast make it easy to turn a Web site into a push channel, although it's not something I see much of — yet.

Right now, my Internet Explorer 4 machine runs several Active Desktop Channels. That isn't something I recommend to the faint of heart, but it's a feature I like tremendously. The idea of getting live content — be it *TV Guide*, CNN News, an announcement off my company intranet or content from a competitor's Web site — works for me.

Last year at Internet World I saw the hype and the companies that failed. This year I'm starting to see push become real. And I like it. □

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The myth of disintermediation

David Moschella

One of the most frequent forecasts for the Web is that it will let companies sell their products directly, bypassing the traditional need for channel support.

The idea even has its own fancy Latinate name — disintermediation — literally meaning the removal of a layer or function that exists between two other layers or functions.

Frequently cited examples include online booksellers, stock traders and travel agencies. Those certainly are interesting and powerful examples of the Web's potential, but even a cursory analysis reveals that those innovations have almost nothing to do with disintermediation. What's really going on is that the Web is generating new forms of channel competition. Consider the following:

Clearly, Amazon.com is an online bookstore. It's a new type of bookstore, but it's a retail channel nonetheless. It's not as if Random House and Doubleday suddenly began to sell their works directly online. That would be real disintermediation. But in the case of Amazon.com, no disintermediation has occurred. Buyers and sellers are still separated by a value-added channel.

Online travel services such as Microsoft's Expedia follow a similar pattern. If true disintermediation were occurring, the airlines would be selling their tickets directly online. Some of them are doing that, but many consumers find it much more convenient to buy through travel agents that serve as information aggregators. Once again, a robust value-added channel sits between the customer and the actual service provider. Expedia may be a travel company that's very different from the traditional agency, but both provide similar functions.

Online stock trading also remains a channel-based business. Customers continue to trade with their broker. That many customers buy online from Charles Schwab, rather than via telephone from Fidelity, represents a major technology shift but not disintermediation. Disintermediation would require companies to buy and sell their own stock. Experiments in that area exist but remain marginal.

In each case, a new online channel is emerging as a strong competitor to traditional retail or telephone-based channels. In each example a high level of coexistence is likely for the foreseeable future, so the Web actually is increasing the total number of active channels, not reducing them. How long this coexistence will last will be determined by each channel's ability to efficiently create value for its customers. Nonetheless, all three businesses will likely remain channel-based.

Perhaps the closest thing to real disintermediation is the increasing success of Dell Computer. But even there, the story is mixed. Dell has always sold direct; what's new is that its business is shifting from the telephone to the Web. From a more historical perspective, some portion of Dell's PC business has always been sold direct — first by mail order, then via toll-free numbers and now the Web.

But let me clarify one thing. The fact that these changes don't constitute disintermediation in any meaningful sense of the word doesn't diminish their importance. That they are really a case of channel and technology competition doesn't make them any less terrifying to Barnes & Noble, Fidelity or PC dealers. But at this stage, we should recognize that competition on the Web is mostly about the battle between channels, not their elimination. □

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Dispatches & images from the fringes of the electronic frontier

WAR ON INFO GLUT

Muse Technologies in Albuquerque, N.M., recently won a U.S. Navy contract to fight one of a warship commander's biggest enemies: information overload. The company's advanced user interface fuses data from various sources — such as sonar readings and undersea maps — into one interactive, multidimensional view on a PC screen. Remote network users also will be able to view the "information environments." The project is directed by the Naval Undersea Warfare Center.

Patent watch

Recently issued U.S. patents (number, inventor/assignee, date)

Agricultural network in which an agronomist's master computer polls farm PCs to obtain digital maps that show the soil conditions and crops in each farmer's fields. With this data, the agronomist can prescribe a blend of fertilizers to maximize crop yields. (5,689,418, Ag-Chem Equipment Co., Minnetonka, Minn., Nov. 18)

Graphical user interface that uses hallway and room metaphors to help a user navigate a local computer system. A street metaphor is used to explain connections to external computer networks. (5,689,669, General Magic, Mountain View, Calif., Nov. 18)

Programmable vending machine that automatically cooks and delivers a variety of hot foods to the consumer. The start and stop times for the heating units are stored in memory chips. Those chips can be reprogrammed for different foods or to comply with local conditions. (5,688,423, KRH Thermal Systems, South San Francisco, Calif., Nov. 18)

Source: MicroPatent (www.micropat.com)

Sticky notes

The inventors of Post-It Notes have created a version of the stick-on reminders for Internet sites. Web developers can create "virtual" Post-It Notes that users can drag from a site to their desktop. The notes remain active after the user logs off the 'net. (www.3M.com/webnotes)

The AIDS Memorial Quilt — which is the length of 25 football fields and weighs about 57 tons — is too big to display or transport easily. To provide wider access, the Names Project Foundation built a Web-based database (www.aidsquilt.org) that offers a virtual display of the memorial to AIDS victims. The Informix database includes more than 70,000 names and 43,000 photographs. At right, Holly Lugassy, Informix grants program manager, works with photographer Paul Margolies on the project.

Inside Lines

Spam from the mother ship

The discussion group mn-politics Internet mail list was spammed early last month by a surprising source. Rather than forwarding messages to another discussion group, a misbehaving server bounced them back to the list. The server's location? A World Wide Web discussion group consortium largely funded by Hormel Foods, Inc. — makers of Spam.

Virtual travel

Hewlett-Packard and American Express Travel Related Services today were expected to announce an electronic-commerce program that combines HP's computers with Amex's payment processing.

Delays, delays

Novonyx in Orem, Utah, the start-up jointly funded last spring by Novell and Netscape, won't introduce its first products this week as planned. A press conference announcing the company's initial products, slated for Wednesday, was abruptly canceled late last week. The Netscape Enterprise Server 3.0 and the Netscape Fast-Track Server bundled into Novell's IntranetWare 4.11 will debut "sometime in January," a Novonyx spokesman said.

Revenge with that eggnog?

Maddened by the confusing assembly instructions and operating manuals for gift gizmos this holiday season? Vent your frustration by submitting those dense directions to CoreComm Technical Communication Services in Houston. It hosts a worst-technical-writing-sample-of-the-month contest at *www.corecomm.com/worst.html*. Gems include this instruction for a VCR: Stand-By Button may be used to shut off VCR power immediately or VCR power will shut off in about 5 seconds after OTR Button is pushed during a One Touch Recording, when Timer Button is off.

Growing pains

Microsoft hasn't always found it easy to play at the enterprise level. The latest example: a two-month delay in shipping an enterprise version of its SQL Server 6.5 database because Microsoft had trouble finding users who actually have big Windows NT servers and were willing to take them off-line for beta testing. General availability is scheduled for next month.

The video is out there somewhere . . .

Web sites that sell entertainment products, like video, are competing for Web surfer time with actual entertainment, said John Waddell, manager of IS at Videoflicks Canada Ltd., which sells videos in person and online. "We can tell when there's a new *X Files* on," he said, referring to the popular sci-fi television show. "We don't have any new orders coming in at all."

Spin control

How do you counter bad press from a Department of Justice investigation? Well, if you're Microsoft you commission a survey that shows the public is behind you in your bid to include Internet Explorer as part of the Windows 95 and Windows NT operating systems. The survey of 1,200 consumers conducted by the polling firm of Peter D. Hart and Robert Teeter in Seattle found (surprise, surprise) that by a "more than 4-to-1 ratio," Americans believe the marketplace and not government regulation, should determine what features go into computer software programs.

Maybe somebody in Redmond needs to get a new calendar? Microsoft Outlook 97 users report that the software's calendar shows the Lunar New Year as a Japanese holiday (it isn't) and omits it from the calendar for China, where it is celebrated. Luckily, few users depended on Outlook 97 for Thanksgiving travel plans; it gave the date as Wednesday, Nov. 26. Service Pack 1, which fixed the problem, shipped in late summer. But many users missed the fix. If you're missing a fix or have other rumors or news tips, call Computerworld *news editor Patricia Keefe at (508) 820-8183, patricia_keefe@cw.com.*

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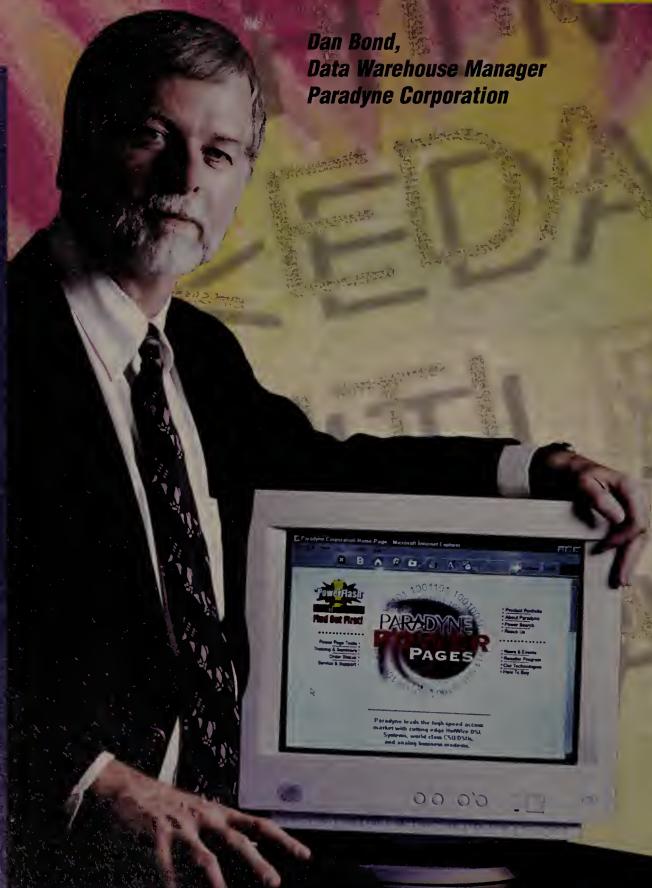
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